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FROM

Mrs.F.Q.Brown,

Dobbs Ferry,N.Y.

THE

FAMILY MAGAZINE,

OR

GENERAL ABSTRACT OF USEFUL KNOWLEDGE.

EMBELLISHED WITH SEVERAL HUNDRED ENGRAVINGS.

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CONTENTS.

ASTRONOMY—

The Fixed Stars 22
Eclipses 202
The Zodiack 251
Equinoxes and Solstices 254
AGRICULTURE— 32
Potatoes 33
American Lyceum 34, 76
A Case of Insanity 39
A New Curiosity in Nat. History 115
A Sketch of the Druids 115
Animal Magnetism 137
ARCHITECTURE 143
Abbey of La Trappe 197
American Rail, or Sora 247
Arms of the United States 261
Apparatus for drawing off water 275
Adventures of Col. Daniel Boone 282
A woman who spoke without a tongue 304
Algebra 304
Abacus 310
Antipathy of the Rattlesnake to the White-Ash 330
Anthracite Coal of Pennsylvania 433

BIOGRAPHY—

Jacob Perkins 18
Alexander Hamilton 42
John Marshall 97
Dewitt Clinton 177
Robert Fulton 218
Charles Carroll 259
William Harvey 398
BOTANY— 52
Nutmeg, etc. 99,100
Sensitive plant 130
Side-Saddle Flower 131
Elements of— 180,252,290,325-6,369,446
Bamboo 53
Boundaries of Empires 217
Battle Monument, Baltimore 238
Beautiful Extract 280
Boylston Prize question 349

CHYMISTRY—

Chymical Decomposition 11
Oxygen 12
Hydrogen 45
Water 46
Oxygenized Water 48
Nitrogen, etc. 87, 89
Nitrogen with Hydrogen 124
Chlorine with Nitrogen 127
Bromine, Iodine, etc. 172—174
Sulphur, etc. 209—210
Phosphorus, etc. 260, 261
Carbon 294
Silicon, etc. 327
Metals 366
Fermentation 403
Chinese Punishments—No. 4 31
No. 5 79
No. 6 119
No. 7 155
Coal-Trade of Pennsylvania 39
Common properties of the figure 9 40
Cold Water 25
Capture of Burgoyne 59
Cultivation and Manufacture of Tea 70
Catching Wild Horses on a Prairie 82
Capture of Cornwallis 103
Capt. Ross—Journal of 109, 131
Corsets—American Institute 114
Cotton Manufacture 184
Chapter on Hats 185
Chinese Lady of Rank 199
Capitol of Virginia at Richmond 201
Condensed History of Ohio 215
Castle Rock, Mississippi 216
Cylonese System of the Universe 226
Circulation of the Blood 229
Caoutchouck 248
Chivalry 266
Constituent properties of the Blood 271
Comparative Height of Monuments 273
Combustibility of a Drunkard's Blood 324
Carrier Pigeon 355
Culture of Hops 356
Character of the Esquimaux 395
Chinese Bridges 448
Dover Stone Church 14
Druidical Remains 135
Daniel Morgan 337
Essay of Miss Beecher 62, 101, 145
Extraordinary Indian feats of Legerdemain 270
Excerpts 277
Elias Hicks 350
Early History of Salt Manufacture 375
Egypt 392
Elocution 459
Famies 147
Facts and Phenomena connected with Wind 162
Four Great Historical Ages 205
Franconia Notch 235
Forest Worship 245
Formation of Clouds 465
Geological History of the Creation 105
Good's Study of Medicine—Review 240
Greek Philosophers 257

HISTORY—

The Israelites 3
Solomon's Temple 5
Greece 44
Assyria 45
Egypt, &c. 83—85,249
America 296
Homoferus of the Gulf 95
Headquarters of Washington at Newburgh 149
Halley's Comet 157
Hunting the Wild Hog in Trinidad 200
Hippopotamus 304
History of Printing 344,385
Interiour of a Windmill 343
Independence Bell 355
Indian Gazette 387
Joice Heth 155
Knot Records of Peru 279
Ladies' Head-Dresses 187
Life and its End 200
Locomotives 229
Lyceums 239
Longevity 269
Lisbon 305
Letter to a Sister 452
Minimum Duties 108
Marriage 118
Management of Sleep 188,236
Mechanicks' Institute Fair 200
Method of communicating from a stranded Ship with the Shore 275
More's House, Yorktown, Va. 322
Montezuma's Battle-Axe 365
Merchants Exchange, N. Y. 402
Monumental Church at Richmond, Va. 441

NATURAL HISTORY—

Thibet Dog 7
Paradoxorus 8
Rackoon 8
Striped Hyena 9
Cachemire Goat 48
Four-Horned Sheep 50
The Axis Deer 90
Burrowing Owl 91
Prairie Dog 91
Seal 92
Method of capturing Wild Ducks 127

NATURAL HISTORY—

Soland Goose 129
Fire-Flies 129
Common Deer 174
Ceylon Elk 176
Eider Duck 213
Klipspringer 214
Serpents 254
Black-Tailed Deer 256
The Terrier 291
The Eagle 292
Chameleon 331
White Shark 332
Emeu 371
African Porcupine 372
Summer Duck 373
Civet or Muskcat 374
Canadian Goose 407
Ostrich 408
Numidian Crane 411
Kangaroo 412
Alligator 440
Peacock 442
Spoonbill 443
Scarlet Ibis 444
Notices, Reviews, etc. 40,80,120
Natural Magick 56
New York, as it was in 1673 162
Names of the Months explained 225
Niagara Falls 231
Novel Organick Remains 432
Operations and Effects of Stays 55
Obituary Notice of Mrs. Hemans 114
On the Human Hair 313
On happiness 342
Ornithicnology 293
Old Ticonderoga 414
Olden Time in Massachusetts 422

PHYSICAL GEOGRAPHY—

Classification of Oceans and Mountains 15
Interiour Structure of the Earth 59
" 85
Metals 140
" 168
Water, Springs, &c. 262
" 298
Atmosphere 342
" 376
Climates 427
Pleasures of Ornithology 27
Polar Scenes 28
Physical Education of Girls 54
Pearl Fishery in Ceylon 65
Popular Education 66
Proper Names interpreted 96
Popular Errours in Medicine 117
Petrified Buffalo 147
Philological Critique 197
President's Message 285
" Special Message 400
Publick Squares 430
Rio Janeiro and Brazil—Statisticks of 26
Revolutionary Battles Illustrated—
No. 1 36
No. 2 59
No. 3 103
No. 4 159
No. 5 193
No. 6 232
Ramblings in Winter 300,334,380,420
Ruins of New York Fifteen Days after the Fire 303
Sand-Storms of the Desert 27
Statisticks of Prisons 29
Superstitions of the Druids 78
Scenery on the Mississippi 167
Shoes and their Various Forms 182
Sailing down the Ohio 272

Snow 299
Study of Law 303
Substance of a Discourse on Elocution 352,389,403
Statistical View of Mexico 370
Sugar-Maple Tree and Sugar Making 378
Sylla and Charybdis 398
Synopsis of Eccl. History 399,406
Singular Dexterity of a Goat 431
Silk-Worms 463
The Murder of Miss M'Crea 2
The Statue of Hamilton 42
The Hottentots 73
The Maiden's Rock, on Lake Pepin, Mississippi 121
The Bible 157
Tides and Meteorology 190
The Pearly Nautilus 191
THE FIVE SENSES—
Of Sight 223,264,307,327,362,416
Of Hearing 455
To Young Men 239
Telescope-Holder 275
The Earth shall melt, &c. 278
The Married Man and Bachelor contrasted 302
The Abyssinians 303
The Great Fire in New York 318
The Ostrich 320
The Mushroom 340
The Tomb of Washington 362
The Intrepid Juryman 362
The Coracle 365
The Pulque 382
The Rajah Rammohun Roy 383
The Seminole War 439
Visit to a Negro Cabin in Virginia 242
Vanities of the Human Race 314
Winter 276
Women—Marriage 278
Wild Animals 304
Washington on Matrimonial Advice 349
Waterspouts 396
Why are we Righthanded 400
West Point 423

EMBELLISHMENTS.

Astronomy, illustrated 25
American Steamer on the Mississippi 107
Architecture, Grecian and Roman Columns 143
Apparatus for drawing off Water 275
Appearance of Snow Crystals as seen through a Microscope 299
Abacus 310,312
Ancient Babylonish Inscriptions 344,345
Alligator 442
Botany Illustrations—
99,101,180,181,250,290,325,326,367,369,446
Battle Monument, Baltimore 238
Boa destroying a Tiger 256
Black-Tailed Deer 259
Chinese Punishments 31,79,119,165
Chymisty Illustrations 11,12,13,46,48,87
Cachemire Goat 49
Cultivation of the Tea-Plant 79,72
Catching Wild Horses on a Prairie 81
Catching Wild Ducks 128
Common Deer 174
Ceylon Elk 176
Chinese Ladies of Rank 199
Capitol of Virginia at Richmond 201
Castle Rock, Mississippi 216
Charles Carroll 259
Comparative Height of Monuments 274
Col. Daniel Boon 281
Cleopatra's Needle 392
Canadian Goose 407
Chinese Bridges 448
Dover Stone Church 14
Druidical Remains 137
De Witt Clinton 177
Diagram of Eclipses 203
Effects of Tight Lacing 56,114
Egyptian Columns 144
Egyptian Capitals 144
Eider Ducks, Male and Female 213
Eye Illustrated 223,229
Eagle's Nest 293
Four-Horned Sheep 50
Greenland Seal Hunting 93
Hindoo Columns 144
Hats, various forms—20 cuts 185,187
Human Hair magnified 200 diameters 314
Hop Garden 356
Illustrations in Natural Magick 57
Interiour of a Windmill 343
Indian Gazette 388
Ibis 443
Jacob Perkins 18
Klipspringer 214
Kangaroo 412
Ladies Head-Dresses 187
Locomotive Steam-Engine 230
Lisbon, from Fort Almada 306
Murder of Miss M'Crea 1
Monk of La Trappe at his Devotions 198
Method of Communicating from a Stranded Ship with the Shore 275
Map of the Ruins of the Conflagration of New York, Dec. 16th, 1835 318
Montezuma's Battle-Axe 365
Mahogany Tree 4
New Curiosity in Natural History 115
New York as it was in 1673 161
Negro Cabin in Virginia 241
Numidian Crane 411
Nightingale and Glow-Worm 429
Ornithicnology 394
Ostrich 409
Plan of New York Island, &c. 36
Paradoxorus 8
Pearly Nautilus 191,192
Properties of Blood Illustrated 271
Portraits of Guttenburgh, Faust and Schoeffer 348
Peacock 444
Rackoon 8
Revolutionary Battles No. 2 59
No. 3 103
No. 4 159
No. 5 193
No. 6 232
Robert Fulton 219
Residence of Elias Hicks 350
Ruins of the Merchants Exchange, N.Y. 401
Solomon's Temple 5
Striped Hyena 9
Statue of Hamilton 41
Soland Goose 129
Shoes and their various forms—21 cuts 152,154
Specimen of Ancient Building 167
Signs of the Zodiack 252
Sight Illustrated—
264,266,307,309,328,330,416,417
Sugar Making 378
Singular Dexterity of a Goat 431
Spoonbill 445
Thibet Dog 7
Tomb of Hamilton 44
The Bamboo 53
The Hottentot 73
The Axis Deer 90
The Burrowing Owl 91
The Maiden's Rock 121
The Sensitive Plant 130
Telescope Holder 275
The Chameleon 331
White Shark 332
Mushroom 340,341
Hop 360
Tomb of Washington 361
The Coracle 365
Emeu 371
African Porcupine 372
Summer Duck 373
Civet or Muskcat 374
Pulque 382
Rajah Rammohun Roy 383
Old Fortress of Ticonderoga 414
View of Pearls in Oysters 65
Venous and Arterial Systems 228
Vanities of the Human Race 315,317
View of More's House at Yorktown 321
Washington's Headquarters at Newburgh 149
West Point 423

POETRY.

Art 25
The Orphan Girl 40
To Seneca Lake 58
To One Bereft 64
Wyoming 69
Conscious Guilt 80
The Bible 86
A Moral taught by a Flower 105
Mrs. Heman's Last Poem 115
On laying the Corner Stone of the Monument to the Mother of Washington 108
Kindness 120
An Indian Story 123
To the Appenines 147
Epithalamium 158
Sonnet 158
To a Little Boy 179
The Western Hunter 184
The Confession 184
My Country 212
Fame 222
My Native Land 227
Temperance Daystar 231
Battle of the Kegs 234
To a Redbreast 235
On leaving New York 268
Memory 274
The Knight's Epitaph 280
The Love of Country and of Home 295
The Ringlet 317
Our Country's Call 355
New England 365
The Wagoner 369
The Widowed Mother 384
I know thou hast Gone 398
Nightingale and Glow-Worm 429
Boat-Horn 438
The Family Meeting 451

THE FAMILY MAGAZINE,

VOLUME THIRD.

MURDER OF MISS JANE M'CREA, at Ford Edward. N. Y

THE MURDER OF MISS M'CREA.

The excellent representation of this terrible atrocity, with the story of which most of our readers are already acquainted, was copied by permission, from a painting by Messrs. Ward and Page, now in the possession of Mr. Clover. The landscape portion was drawn by our very promising young countryman Mr. Ward, upon the spot of the original scene. The figures in the painting were done by Mr. Page; those in our picture, however, were copied in part from his, but mostly from a fine English copperplate engraving of the same scene. This is the first of a series of historical engravings with which we promised to embellish the numbers of our Magazine. We feel assured that one engraving of this kind will give infinitely more satisfaction to the American reader, than half-a-dozen views of old castles, churches, or eccentrick characters.

The following version of this story is from the industrious and prolifick pen of Mr. Sparks:—

The murder of Jane M'Crea has been a theme which eloquence and sensibility have alike contributed to dignify, and which has kindled in many a breast the emotions of a responsive sympathy. Gen. Gates's description, in his letter to Burgoyne, although more ornate than forcible, and abounding more in bad taste than simplicity or pathos, was suited to the feelings of the moment, and produced a lively impression in every part of America—and the glowing language of Burke, in one of his celebrated speeches in the British Parliament, made the story of Jane M'Crea familiar to the European world.

This young lady was the daughter of a clergyman, who died in New Jersey before the Revolution. Upon her father's death she sought a home in the house of her brother, a respectable gentleman residing on the western bank of Hudson's river, about 4 miles below Fort Edward. Here she formed an intimacy with a young man named David Jones, to whom it was understood she was engaged to be married. When the war broke out, Jones took the side of the royalists, went to Canada, received a commission, and was a captain or lieutenant among the provincials in Burgoyne's army.

Fort Edward was situate on the eastern margin of Hudson's river, within a few yards of the water, and surrounded by a plain of considerable extent, which was cleared of wood and cultivated. On the road leading to the north, and near the foot of the hill, about one third of a mile from the fort, stood a house occupied by Mrs. M'Neil, a widow lady and an acquaintance of Miss M'Crea, with whom she was staying as a visiter at the time the American army was in that neighbourhood. The side of the hill was covered with a growth of bushes, and on its top, a quarter of a mile from the house, stood a large pine tree, near the root of which gushed out a perennial spring of water. A guard of one hundred men had been left at the fort, and a picket under Lt. Van Vechten was soon stationed in the woods on a hill a little beyond the pine tree.

Early one morning this picket guard was attacked by a party of Indians, rushing through the woods from different points at the same moment, and rending the air with hideous yells. Lt. Van Vechten and five others were killed and scalped, and four were wounded. S. Standish, one of the guard, whose post was near the pine tree, discharged his musket at the first Indian he saw, and ran down the hill towards the fort; but he had no sooner reached the plain, than three Indians, who had pursued him to cut off his retreat, darted out of the bushes, fired and wounded him in the foot. One of them sprang upon him, threw him to the ground, pinioned his arms, and then pushed him violently up the hill. He naturally made as much haste as he could, and in a short time they came to the spring, where several Indians were assembled.

Here Standish was left to himself, at a little distance from the spring and the pine tree, expecting every moment to share the fate of his comrades whose scalps were conspicuously displayed. A few minutes only had elapsed, when he saw a small party of Indians ascending the hill, and with them Mrs. M'Neil and Miss M'Crea on foot, He knew them both, having often been at Mrs. M'Neil's house. The party had hardly joined the other Indians when he perceived much agitation among them, high words and violent gestures, till at length they engaged in a furious quarrel, and beat one another with their muskets. In the midst of which fray, one of the chiefs, apparently in a paroxysm of rage, shot Miss M'Crea in the breast. She instantly fell and expired. Her hair was long and flowing. The same chief grasped it in his hand, seized his knife, and took off the scalp in such a manner as to include nearly the whole of the hair—then springing from the ground, he tossed it in the face of a young warriour, who stood near him watching the operation, brandished it in the air, and uttered a yell of savage exultation. When this was done, the quarrel ceased—and, as the fort had already been alarmed, the Indians hurried away as quickly as possible to Gen. Fraser's encampment on the road to Fort Anne, taking with them Mrs M'Neil and Samuel Standish.

The bodies of the slain were found by a party that went in pursuit, and were carried across the river. They had been stripped of their clothing, and the body of Miss M'Crea was wounded in nine places either by a scalping knife or a tomahawk. A messenger was despatched to convey the afflicting intelligence to her brother, who arrived soon afterwards, took charge of his sister's remains, and had them interred on the east side of the river, about three miles below the fort. The body of Lt. Van Vechten was buried at the same time and on the same spot.

History has preserved no facts by which we can at this day ascertain the reason why Miss M'Crea should remain as she did in so exposed and unprotected a situation. She had been reminded of her danger by the people of the fort. Tradition relates, however, and with seeming truth, that through some medium of communication she had promised her lover, probably by his advice, to remain in this place, until an opportunity should occur to join him in company with her hostess and friend. It is said, that when they saw the Indians coming to the house, they were at first frightened, and attempted to escape—but, as the Indians made signs of a pacifick intention, and one of them held up a letter intimating that it was to be opened, their fears were calmed and the letter was read. It was from Jones, and contained a request that they would put themselves under the charge of the Indians, whom he had sent for the purpose, and who would guard them in safety to the

British camp. Unfortunately, two separate parties of Indians, or at least two chiefs acting independently of each other, had united in this enterprise, combining with it an attack upon the picket guard. It is incredible that Jones should not have known this part of the arrangement, or he would have foreseen the danger it threatened. When the prize was in their hands, the two chiefs quarrelled about the mode of dividing the reward they were to receive—and according to the Indian rule of settling disputes in the case of captives, one of them in a wild fit of passion killed the victim and secured the scalp. Nor is it the least shocking feature of the transaction that the savage seemed not aware of the nature of his mission. Uninformed as to the motive of his employer for obtaining the person of the lady, or not comprehending it, he regarded her in the light of a prisoner and supposed the scalp would be an acceptable trophy. Let it be imagined what were the feelings of the anxious lover, waiting with joyful anticipation the arrival of his intended bride, when this appalling proof of her death was presented him. The innocent had suffered by the hand of cruelty and violence, which he had unconsciously armed—his most fondly cherished hopes were blasted, and a sting was planted in his soul, which time and forgetfulness could never eradicate. His spirit was scathed and his heart broken. He lived but a few years, a prey to his sad recollections, and sunk into the grave under the burden of his grief.

The remembrance of this melancholy tale is still cherished with a lively sympathy by the people who dwell near the scene of its principal incidents. The inhabitants of the village of Fort Edward have lately removed the remains of Miss M'Crea from their obscure resting-place, and deposited them in the publick burial ground. The ceremony was solemn and impressive. A procession of young men and maidens followed the relicks, and wept in silence when the earth was again closed over them—thus exhibiting an honourable proof of sensibility and of respect for the dead. The little fountain still pours forth its clear waters near the brow of the hill and the venerable pine yet stands in all its majesty, broken at the top, and shorn of its branches by the winds and storms of half a century—but revered as marking the spot where youth and innocence were sacrificed in the tragick death of Jane M'Crea.

HISTORY.

"History presents *complete* examples. *Experience* is doubly defective; we are born too late to see the beginning, and we die too soon to see the end of many things. History supplies both of these defects: modern history shows the causes, when experience presents the effects alone: and ancient history enables us to guess at the effects, when experience presents the causes alone."—*Bolingbroke.*

PERIOD V.

The period of Homer, extending from the dedication of Solomon's temple, 1004 B. C. *to the founding of Rome* 752 *years* B. C.

THE ISRAELITES.

The Israelites continue to maintain a high and important rank among the ancient nations, up to Period V. Although we have seen them hunted down and oppressed by almost every contemporary nation or tribe whose hostility and hate could reach or affect them, yet the chosen of the Almighty have been sustained through unexampled vicissitudes and unequalled sufferings. From the time of their expulsion from their native land, until the death of David, they had not the slightest guarantee of peace, but the ancient promise of Noah, or a hope in God, whose favour was continually manifested in miracles. Suffering all that human nature could sustain in Egypt, they were miraculously delivered and sent back miraculously protected to the promised land. Threatened with extermination by the hordes of murderous tribes that infested Canaan, they were obliged even here to exert all their strength and vigilance, to defeat the designs of treachery and to escape the hands of blood-thirsty savages. After frequent and obstinate battles, great losses, persevering and indefatigable action, they succeeded under the excellent generalship of the conquering Joshua, in getting a footing upon the promised land. For the space of 356 years afterwards, they but illy prospered under the governing direction of a succession of judges. Samuel, the last and most eminent of these leaders, was succeeded by a king in the person of Saul. His reign was characterized by crime and ill success, and he died miserably. Then came the brave, talented, and pious David. His valiant and indomitable energy, while it ensured fame to himself, raised his people to the greatest eminence and renown. After him the wise and rich Solomon succeeded to the throne of Israel, and we now approach a period of profound peace and prosperity in the history of this people.

We have seen the Philistines, the Moabites, the Ammonites, the Amalekites, and the Idumeans very nearly supplanted, and most of them, if not destroyed, at least no longer known as nations. The Canaanites also, involving themselves with the Phenicians, no longer had a national existence. The Phenicians had considerably improved, and were slowly progressing in navigation, trade and the arts. Greece had been occupied with the Trojan war, and was yet in an unsettled state. Egypt was suffering the direst calamities, the retributory vengeance of heaven for their inhumanity, injustice and crime. The Lydian merchants had been driven from the borders of the Ægean sea by the invading Ionians, and their commercial operations at this juncture seem to have been entirely restricted, or at least confined to the obscurity of their own nation. Italy was quiet, and confined herself to domestick industry and the study of the arts. Syria seems to have been nursing a hostile jealousy, and preparing herself for an invasion of Israel, Muh-wang was upon the Chinese throne, and, scarcely recovered from the evils of a civil war which had resulted from the rivalry of seventy independent government acknowledging one king, China was defending herself against the Tartars.

Solomon, the son of David by Bathsheba, commenced his prosperous reign over Israel, by putting to death all who were ambitious of the throne, and in fulfilling his father's instruction in relation to the building of a temple that he had designed as a magnificent repository of the ark of God. Among other expedients to fortify himself against enemies, he resorted to an alliance with the king of Egypt, and married that powerful prince's daughter. Her dowry was the city of Gezer, which Pharaoh had taken from the Canaanites. Solomon, in his choice of wisdom, prayed God for such a degree of wisdom only, as might enable him to govern with that prudence and sagacity, as became a king of Israel. That wisdom was chiefly manifested in a judicious government adapted to the people and to the times; in the management of commercial intercourse, and his diplomatick relations; in settling his customs and finances; in the choice of his officers; in the regulation of his army; in his administration of justice, and the general discipline of his subjects. This excellent economy of the state; added to his immense riches, "gave him such a powerful sway, that he lived in the profoundest peace, plenty and grandeur of any prince of his times; beloved by his friends and allies, who were constantly pouring the richest treasures upon him; feared by his enemies, receiving large tributes from several crowned heads, and resorted unto from all parts of the world, for his excellent wisdom and magnificence, which brought in a continual concourse of strangers to his metropolis, and enriched it to such a degree, that gold and silver seemed to have lost their intrinsick value, by their extraordinary abundance." The revenue of his navy alone exclusive of his customs, amounted to nearly seven hundred and fifty thousand dollars. He encouraged every branch of trade and industry that was laudable and useful; he first introduced horses and chariots into Israel, and he had forty thousand stalls of horses for his chariots, and twelve thousand horsemen, and with his unexampled magnificence and wealth, unlike many of the rich of modern days, he had a largeness of heart, even as the sand that is on the seashore. His dominion extended from beyond the river Euphrates, to the Nile or borders of Egypt, and all the kings of those countries were tributary to him 1 Kings 4. He opened a correspondence with many foreign princes, through whose friendship, especially that of Hiram, king of Tyre, he obtained abundant materials for building his temple, in exchange for the produce of his own dominions. The particulars in relation to the building of this temple, which, according to some historians was the most important act of his reign, we give in the description below. In procuring materials for this magnificent temple, Solomon built a navy upon the Red sea and placed it under the care of Tyrian sailors, who in the course of three years brought him an immense quantity of gold and silver from Ophir, and precious stone, spices, ebony, ivory, apes, &c. from Tarshish. There have been great disputes as to the situation of Ophir and Tarshish. Some have conjectured that they were in China, others in the East Indies or on the borders of the Red sea, or perhaps in the Mediterranean; but James Bruce, in his travels to discover the source of the Nile, proves conclusively that Sofala, the main land opposite to Madagascar on the southeastern coast of Africa, is the Ophir and Tarshish of Antiquity.* Solomon's renown also brought to him Queen Sheba, who made him magnificent presents. She is spoken of in the Scriptures as the Queen of the South; and Mr. Bruce clearly proves that she was Queen of Abyssinia, and in possession of Ophir. In the midst of his glory and in an administration that would have seemed to require the most constant study and vigilance, Solomon completed his magnificent temple after seven years' labour, and consecrated it to the Lord: a work, the extraordinary, intricate and extensive design of which, says Josephus, would have crazed any head but Solomon's; yet he had an almost incredible number of workmen employed in every variety of art, and the stone and the timber were hewn in the mountains, and in fact all the materials were prepared, before the temple was put together, so that when it was erecting, not the sound of a hammer was heard.

It is interesting to contemplate the extraordinary reign of this most extraordinary man. As he was a prince of unequalled splendour, so he was a man of unequalled wisdom; if his wealth was unexampled so was his munificence. If he had artificial attractions around him, so there came of all people to hear his wisdom: "For he spake three thousand proverbs: and his songs were a thousand and five. And he spake of trees, from the cedar tree that is in Lebanon even unto the hyssop that springeth out of the wall: he spoke also of beasts, and of fowls, and of creeping things, and of fishes." He wrote the books of Proverbs, and Ecclesiastes and the Canticles. Who ever studied the first, without observing truth and imbibing the most excellent practical wisdom from every line? The second contains lessons and advice, without practically adopting the spirit of which, no man can prosper. The last as a model of poetry, imbodying the finest sentiments in the most beautiful and effective language, is unsurpassed and unsurpassable! To point out an instance in which he expresses a common truth in the most beautiful language, and in which he evinces a most perfect knowledge of the anatomy of the human system: Ecclesiastes 12: 6. *Or*

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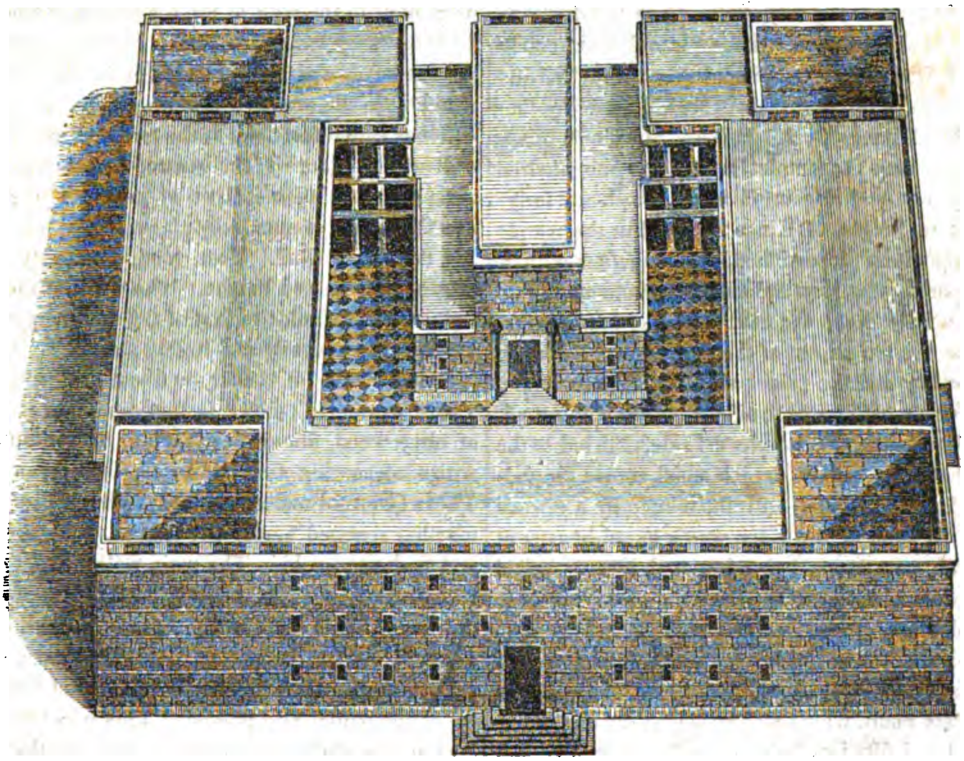
* Bruce's Travels. Vol. 2, p. [illegible]

ever the silver cord be loosed, or the golden bowl be broken, or the pitcher be broken at the fountain, or the wheel broken at the cistern: Then shall the dust return to the earth as it was, &c. By the silver cord is meant the nerves, which proceeding from the brain, are collected in the *medulla oblongata* in the rear part of the head, and distributed downwards throughout the system, carrying the vital principle through every part. A blow received in the back part of the head, or any contusion of these delicate silver nerves, is extremely dangerous; a severe contusion or a rupture produces instant death. These nerves resemble silver tubes. The "golden bowl" is the scull. The "pitcher at the fountain," is the great *Aorta*, which exactly resembles a pitcher, with the handle affixed; this organ empties the blood into the heart, which is the "fountain." The "wheel at the cistern," is the passage through which the blood is sent from the heart to the lungs, "the cistern," where it is purified and sent back to the fountain. The whole blood is sent round from the "fountain" to the "cistern" in this wheel-like manner every seven or eight minutes. How much wisdom did Solomon exhibit in that single verse! what a beautiful text for one of the subliniest sermons! Yet, is there *one* clergyman in fifty ever knew the meaning of that verse? We confess *we* never knew how to interpret it, until a learned friend, a physician, after severe study pointed out to us its beauties and its truth. In early life, as we have seen, Solomon was exemplary in piety and great in wisdom; but as he grew old he was guilty of great defection from the strictness of religion. So strange indeed were his propensities, that in after life he married seven hundred women, besides taking three hundred concubines, or wives of the second rank. So great was his complaisance and love for them, that he built altars and temples to all their deities; for many of these women were idolators. So great was his corruption that the Lord declared by the prophet Abijah, that he would divide the kingdom after his death, and give ten tribes to Jeroboam; which accordingly took place. Towards the close of his reign, as a punishment for his effeminacy and idolatry, the Lord stirred up certain adversaries against him; and, though the principal evil threatened against Israel was not to occur during his day, yet he had the mortification of knowing that it would be inflicted under the administration of his son; and that his own conduct would be the procuring cause. It is believed by most historians that he repented of his dereliction from duty before he died, though nothing is said on this point in the Bible. This man of extraordinary wisdom and wealth died 975 years B. C. aged fifty-eight years, and after a reign of forty years.



SOLOMON'S TEMPLE.

This magnificent edifice was built upon Mount Moriah at Jerusalem. The foundations were laid in the fourth year of Solomon's reign which was the second after David's death, the 480th after the exodus, and 1011 B. C. David had made great preparations for building the temple, and had collected a vast quantity of gold, silver and other metals and materials before his death. On Solomon's accession to the throne he immediately made contracts with foreign princes to furnish materials to carry on the stupendous work; he caused a census to be taken of all the Canaanitish and other slaves in Israel, that he might arrange his labours, and send abroad for the most skilful artificers and the richest materials. He found 153,600 slaves; 70,000 of whom he appointed to carry burdens, 80,000 to hew timber and stone in the mountains, and the remaining 3,600 as overseers. He also levied 30,000 men out of Israel, and directed them to work in Lebanon one month in every three, 10,000 every month, under the inspection of Adoniram. These it seems were mere rough hewers of stone and timber; for afterwards the materials passed through the hands of the Tyrian artificers, and were conveyed to Joppa on floats, whence Solomon had them conveyed to Jerusalem. Every piece was finished before it was taken to Jerusalem. The temple was completed in seven years.

Although the value of the materials, and the admirable perfection of the workmanship, rank it among the most celebrated structures of antiquity, yet we cannot give credence to the statements of some historians and Jewish rabbins who describe this sacred fabrick with all the exaggerations which the most luxuriant fancy can suggest, as a temple as unequalled in extent as it was in grandeur and richness. It was *not* large, being about one hundred and seven feet in length, thirty-six in breadth, and fifty-four in height. 1 Kings 6: 2. Indeed, Solomon's house was larger than the temple, for that was one hundred and fifty feet long, seventy-five feet broad, and forty-five feet in height. 1 Kings 7: 2. But the temple was exquisitely proportioned, and, together with a grand porch, was most splendidly ornamented.

The temple faced the east. On the rear or west side was the lower part of the city, and on the south was a valley and the principal peak of Mount Sion. There was a gate on each side, together with an additional one on the W. southwest side, that led to the king's house or palace, which stood across the valley, and communicated with the temple by a terrace walk. At each of the gates was a guard-house; at the south gate were two additional houses called Asuppim, where the wardens of the court probably assembled and stored their utensils and arms, &c., and there were similar houses in each of the four corners of the court. In the centre of this court was the priests' court, which was an oblong square of one hundred and fifty feet in length and seventy-five feet in width. There were three doors to this court opening from the north, east, and south. This court was divided by a partition wall through the centre, which made two inner courts of equal extent—the innermost or new court containing the temple, and the outer one the priests' court, containing in its centre the altar of burnt-offerings. A gate opened from this last court directly in front of the grand porch of the temple. This porch, which was in front of the temple, it is said was magnificent. It was thirty-six feet long and eighteen wide. On either side of the entrance was a beautiful brass pillar, splendidly worked, particularly the capitals. The precise height of these pillars it is difficult to determine: but they were six feet in diameter. The pillar upon the right was called *Jachin*, which signifies *he shall establish*, and the other on the left, *Boas*, or *strength is in him*. On either side of the porch winding stairs ascended leading into the chambers of the temple. Directly in front of the entrance to the porch was the door which led into the main room or sanctuary. This door was made of olive wood, beautifully and heavily carved, and overlaid with gold. The mouldings of the door, according to Josephus, were of brass and silver. The sanctuary was a most magnificent room; on whichever side the eyes were turned, no wood nor stone work was to be seen, it was all pure and shining gold. The floor and the ceiling and much of the walls were of cedar, carved with "knops and flowers," but all overlaid with pure gold. The chambers, of which there were three tiers of thirty each, were built in the wall of the temple all around both the sanctuary and the oracle. At the extremity of the sanctuary was made a partition by the chains of gold before the oracle. It is supposed this partition, which is called the "veil of the temple," was a strong wall with a door in the centre, before which was hung a curtain upon a chain of gold. This opened into the oracle or most holy place, where was deposited the ark of God. This room was thirty feet in length, breadth and height. The work of the walls and floor was similar to that of the sanctuary, though probably more costly and highly finished. The altar was made of cedar, and covered with gold. There were also erected in this room two cherubim of olive wood, fifteen feet each in height, and their wings measuring from tip to tip each fifteen feet. These beautiful and sacred ornaments, whose wings together reached across the temple, were also overlaid with pure gold. The main walks of the temple were marble; the roof, of board, and beams of cedar; the temple was lighted by "windows with narrow lights." At the dedication, Solomon had a brazen scaffold built, upon which he stood and addressed the congregation and prayed. This was before the brazen altar of the priests' court. It seems that, afterwards he built an ivory throne, and overlaid it with gold; but whether this throne was situated there or in the temple, we are at loss to determine. If the "pillar" and the throne are one, it was undoubtedly before the alter in the court. This throne doubtless had a covering like the thrones and presidential seats, now-a-days, and this is what is probably meant by the "covert of the sabbath." A monstrous brazen basin or "molten sea," was built in the court, which was fifteen feet from brim to brim, seven feet deep, and forty-five feet in circumference. This was placed on twelve brazen oxen, and was used by the priests to wash in. There were also ten lavers to wash the burnt-offerings in. Ten candlesticks, ten tables, and a hundred basins, all of gold were arranged in the temple. There were also thousands of other instruments, vessels and ornaments all of them of the purest gold and the finest workmanship, adoring this magnificent structure. The immense cost of this temple, as beautiful in its workmanship as it was rich in materials, we have never seen estimated. Solomon reigned after its completion, about thirty years, unequalled in prosperity, in fame, in wisdom, wealth, and magnificence. But as his glory left him in his latter years, so his gorgeous edifice soon after ceased to exist. It was pillaged by Sesac, king of Egypt, and afterwards greatly mutilated on the invasion of the Syrians, and was finally burned in ruins.

The temple was surrounded by an immense wall, which was built with great strength upon the most uneven surface, and according to many writers, was about seven hundred feet square. This furnished a court in which the people were allowed to assemble.

NATURAL HISTORY.

THIBET DOG.

These noble animals are the watch-dogs of the table-land of the Himalaya mountains about Thibet. Their masters, the Bhoteas, to whom they are most strongly attached, are a singular race, of a ruddy copper-colour, indicating the bracing air which they breathe, rather short, but of an excellent disposition. Their clothing is adapted to the cold climate which they inhabit, and consists of fur and woollen cloth. The men till the ground and keep sheep, and at certain seasons come down to trade, bringing borax, tincal and musk for sale. They sometimes penetrate as far as Calcutta. On these occasions the women remain at home with the dogs, and the encampment is watched by the latter, which have an almost irreconcilable aversion to Europeans, and in general fly ferociously at a white face. A warmer climate relaxes all their energies, and they dwindle even in the valley of Nipal.

To the foregoing account we can only append a few additional details derived from the relations of those travellers by whom these dogs have been more particularly noticed. The first of these is Captain Turner, who thus introduces them in his Account of an Embassy to the Court of the Teshoo Lama in Thibet, published in 1800:—"The mansion of the Rajah of Bootan stood upon the right; on the left was a row of wooden cages, containing a number of large dogs, tremendously fierce, strong, and noisy. They were natives of Thibet; and whether savage by nature, or soured by confinement, they were so impetuously furious, that it was unsafe, unless the keepers were near, even to approach their dens."

A few pages further on, our author exhibits them in a much more favourable point of view, as the watchful guardians of the fold. But the most characteristick anecdote respecting them furnished by Capt. Turner is thus related Entering a Thibet village, and "being," he says, "indolently disposed, and prompted by mere curiosity, I strolled alone among the houses: and seeing every thing still and quiet, I turned into one of the stone enclosures, which serve as folds for cattle. The instant I entered the gate, to my astonishment, up started a huge dog, big enough, if his courage had been equal to his size, to fight a lion. He kept me at bay with a most clamorous bark, and I was a good deal startled at first, but recollecting their cowardly disposition, I stood still; for having once had one in my possession I knew that they were fierce only when they perceived themselves feared. If I had attempted to run, he probably would have flown upon me, and torn me in pieces, before any one could have come to my rescue. Some person came out of the house, and he was soon silenced."

Similar accounts of the large size of these dogs, as well as of their ferocity and antipathy to strangers which seem to be regarded as their uniform characteristicks, are given by other writers. Capt. Raper, in his Narrative of a Survey for discovering the Sources of the Ganges, speaking of the trade carried on by the natives of Bootan, says, "Dogs are also brought down by these people. One of them was a remarkably fine animal, as large as a good-sized Newfoundland dog, with very long hair and a head resembling a mastiff's. His tail was of an amazing length, like the brush of a fox, and curled halfway over his back. He was however so fierce, that he would allow no stranger to approach him; and the same fault was observable in the rest of this species." Mr. Moorcroft also, in his journey to Lake Manasarovara, says, "The Uniyas had dogs with their flocks, which were fierce and much disposed to attack strangers."

There can be little doubt that the dogs thus spoken of were all of the true Thibetan race; but we can hardly help suspecting that Mr. Fraser, in his Tour through part of the Himalaya mountains, has confounded them with other breeds. He frequently mentions the dogs of Bischur, of whose strength and activity wonderful tales were told, but always with an air of incredulity both as to their size and powers. This circumstance would lead us to suspect that he had never seen the genuine breed, and our suspicions are strongly confirmed by those passages in his work in which he incidentally touches upon their distinctive characters; for it is clear that a dog "not bigger than a pointer," although "rough-haired and very fierce," could never have been mistaken for a Thibet dog by one who was acquainted with the legitimate race.

THE PARADOXURUS.

Paradoxurus Typus. F. Cuv.

Although the division of the true Carnivora into digitigrade and plantigrade is in many respects objectionable, we feel compelled in conformity with established rules, to remove the animal before us from its most obvious affinities, to arrange it among the latter; placing it, however, at the commencement of that division and nearly in contact with the viverrine groups, to which it is so intimately allied as to have been actually confounded by Buffon, with the common Genette; a mistake which was first clearly pointed out by M. F. Cuvier, but which has obtained so generally among naturalists, that the Paradoxurus is still commonly exhibited under that erroneous name. From the Genettes and Civets it differs little in its general form and habits; its teeth are nearly similar; and its toes and nails closely correspond in number and in their degree of retractility. But it is entirely destitute of the secretory pouch; and, in addition to its plantigrade walk, it exhibits a very peculiar structure in the tail. This organ is as long as the body, and flattened above and below; when extended, the further half is turned over so as to place its lower side uppermost, and the animal has it in its power to roll it up into a spire, commencing from above, downwards to the very base.

The colour of the species varies in different lights; in general it may be described as grayish black, with a tinge of yellow. On this ground it is marked with one broad dorsal, and on each side two or three narrower, indistinct black lines. The under jaw, the legs, and the greater part of the tail are entirely black; and there is a whitish spot above and under each of its eyes.

India and the larger Asiatick Islands appear to be its native country; but nothing certain is known of its habits in a state of nature; in captivity it is sullen and irascible, and evinces no affection for its keeper, appearing in fact totally insensible to the attentions which it receives.

THE RACKOON.

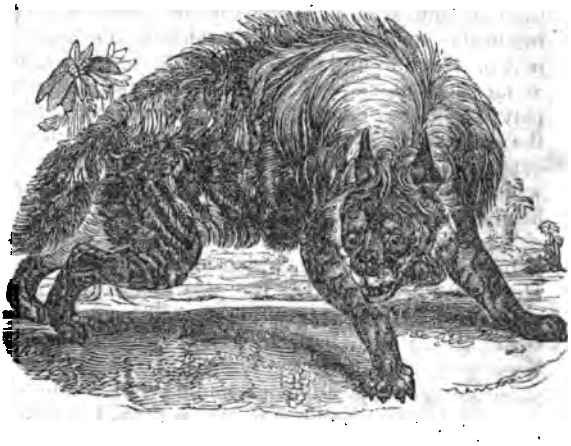
Procyon Lottor. Cuv.

Larger in size and more robust in stature than the Coatis, and approximating still more closely in their physical characters to the bears, which may be considered as the typical group of the plantigrade Carnivora, the rackoons naturally occupy an intermediate station between the playful, timid, and harmless little creatures just noticed, and the powerful, clumsy, and dangerous tribe of bears. Like both bears and coatis they have in each jaw six sharp incisors, two strong canines, and twelve cheek teeth, six on each side. But these latter differ from those of the Bears, inasmuch as the whole six form a regular series, the three anterior ones of which are small and pointed, and the three posterior broad and surmounted by prominent and blunted tubercles; while in the Bear the three anterior appear rather to form a supplemental appendage, being placed irregularly and at unequal distances, and not unfrequently falling out altogether as the animal advances in age: the tubercles on the crowns of the posterior ones are also much less strongly marked. The Coatis exhibit nearly the same mode of dentition as the Rackoons; but striking marks of distinction between them are afforded by the comparative length of the tail, which in the latter is scarcely half as long as the body; and by that of the snout, which, instead of being prolonged into an extensible muzzle, capable of being moved about in all directions, as in the Coatis, is scarcely produced beyond the lower lip, and has very little motion. The strongly marked difference in physiognomy arising from this circumstance is increased by the width of the head posteriorly, which is so great as to give to the general outline of the face of the Rackoons the form of a nearly equilateral triangle. Their ears are of moderate length, upright and rounded at the tip; their legs strikingly contrast in their slender and graceful form with the strong and muscular limbs of the Bears; and their nails, five in number on each of the feet, are long, pointed, and of considerable strength. The whole body is clothed with long, thick, and soft hair; and its general shape, notwithstanding its intimate connexion with the Bears, and its short and thickset proportions, is not without a certain degree of elegance and lightness.

The Rackoons are natives of America, and the species which has been most frequently observed by naturalists, and which we are now to describe is most frequent in the northern division of this continent. Indeed it may admit of doubt whether it ever advances further south than the Isthmus of Darien, the animal described by M. d'Azara as identical with it being evidently a distinct species. Its fur is usually of a deep grayish black, resulting from the intermixture of those two colours in successive rings on each individual hair. The shades of colour vary on different parts of the body, and are as usual much lighter below and on the inside of the legs. The face, which is nearly white, is surrounded by a black band of unequal breadth, passing across the forehead, encircling the eyes, and descending obliquely on each side towards the angle of the jaw. The whiskers are of moderate length; and the hair of the face generally, as well as of the legs, is short and smooth. The tail, which is thick at the base, tapering gradually to the tip, and covered with long hairs, has five or six brownish rings, alternating with an equal number of the lighter colours, which is prevalent on the lower parts of the body.

All that we know of their habits in a state of nature may be comprised in the single fact, that, in addition to the vegetable substances, and more particularly fruits, which form the principal part of their subsistence, they feed on the eggs of birds, and even on the birds themselves, their agility and the structure of their claws affording them the means of reaching the tops of the tallest trees with quickness and facility. In captivity they are easily tamed, and even appear susceptible of some degree of attachment; but they never entirely lose their sentiment of independence, and are consequently incapable of complete domestication. When placed under a certain degree of restraint they appear contented and happy, are fond of play, and take pleasure in the caresses of their friends, and even of strangers; but however long this kind of domestication may have continued, and how much soever they may seem reconciled to their confinement, the moment the restraint is withdrawn and they feel themselves again at liberty, the love of freedom prevails over every other consideration, and they become as wild as if they had never been reclaimed. In eating, they commonly support themselves on their hind legs, and carry their food to the mouth between their fore paws, having first plunged it in water, if the liquid element, of which they are remarkably fond, is within reach. This singular peculiarity, the object of which is not very obvious, but from which the animal derives his specifick name, does not, however, appear to be constant and uniform, being frequently entirely neglected. The same may be said of their fondness for shellfish and mollusca, for which they are generally stated to have a great partiality; some of them, displaying the greatest address and dexterity in opening the shell of an oyster, and extracting its contents, while others absolutely refuse to touch it.

The Rackoons are found in every state in the Union, and every where make great depredations during the night in fields of young green corn. They are caught in traps; but most frequently when corn is in its milk, hunters pursue them from the fields with dogs; they make for some large and thick tree, whereupon the hunters kindle a fire around its base, and shoot them by its light, or wait till the break of day when their prey is visible and easily taken. Their skins are sold to the hatters for from twenty-five to thirty cents.



THE STRIPED HYENA.
Hyena vulgaris. Desm.

Like both the cats and the dogs, the Hyenas are completely digitigrade; that is to say, they walk only on the extremities of their toes: but these toes are four in number on each of their feet, and are armed

armed with short, thick, strong, and truncated claws, which are not in the least retractile, and are evidently formed for digging in the earth, a practice to which they are impelled by a horrid and hateful propensity, which we shall have further occasion to notice in describing their habits and mode of life. Their body, in shape much resembling that of the wolf, to which they also approach very nearly in size, is considerably more elevated in front than behind, owing partly to their constant custom of keeping their posterior legs bent in a crouching and half-recumbent posture. Beneath the tail, which is short and dependent, they are furnished with a pouch, in the interiour of which is secreted a peculiar matter of a very strong and disagreeable smell. Their head is large and broad, flattened in front, and terminating in a short, thick, and obtuse muzzle. Like most carnivorous animals, they are armed in each jaw by six cutting teeth, and two canine, the latter of which are of considerable size and strength. The outermost pair of incisors in the upper jaw are much larger and stronger than the rest, and closely resemble the canine in form. The number of the molar or cheek teeth is five on each side in the upper jaw, and four in the lower; and all of them are remarkable for their extreme thickness and strength in comparison with those of the dogs and cats. Their tongue is similar to that of the latter animals in the roughness which it derives from the sharp and elevated papulæ with which it is covered.

Of the genus thus characterized there exist two well-marked and unquestionably distinct species, the Striped Hyena, or Hyena vulgaris of modern zoologists, which there can be no doubt is also the Hyena of the ancients; and the Hyena crocuta, or Spotted Hyena, the Tiger Wolf of the colonists of the Cape of Good Hope. To these may probably be added a third species, which there is good ground for believing to be distinct, and which has lately been described by Dr. Andrew Smith, the superintendent of the South African Museum, under the name of Hyena villosa: this is also a native of the vicinity of the Cape, and is denominated by the settlers the Strand Wolf, or Strand Jut. With the two latter we have, however, on the present occasion, no concern; the only animal of this genus in the Tower belonging to the striped race, which inhabits the greater part of Asia and of Africa, penetrating in the former as far as India, and extending over all the northern part of the latter continent. It does not appear that the striped and spotted races are ever found to occupy the same ground; but the territorial limits which separate the one from the other have not yet been distinctly ascertained.

The striped Hyena has for its ground colour a uniform brownish gray, which is somewhat darker above than beneath. On the side of the body it is marked by several irregular distant transverse blackish stripes or bands, which are more distinct on the lower part. Towards the shoulders and haunches these stripes become oblique, and they are continued in regular transverse lines on the outside of the legs. The front of the neck is completely black, as are also the muzzle and the outsides of the ears; the latter being broad, moderately long, and nearly destitute of hairs, especially on the inside. The hair of the body is long, particularly on the back of the neck and on the spine where it forms a full and thick mane, which may be said to be continued even upon the tail, the latter organ being furnished with strong tufted hairs of considerable length. The mane and the tail are both marked with blackish spots or stripes variously and irregularly placed. Much variety is indeed to be met with as well in the ground colour of the whole body as in the disposition of the markings, which are extremely different in different individuals.

The habits of the Hyenas are entirely nocturnal; while in the daytime their cowardice is so excessive that they fly from the face of man, and suffer themselves, when taken, to be ill treated with impunity and even without attempting to avenge themselves, they prowl abroad in the stillness of the night with all the temerity of brutal daring. They will frequently make prey of the lesser animals, and will occasionally venture to attack dogs and even horses; but it is seldom that they muster up sufficient courage to contend with living man, unless stimulated by strong provocation, or impelled by the most violent cravings of hunger. Congregated in numerous bands they beset the encampment of the traveller, or infest the neighbourhood of villages or even in towns, which they enter with the fall of night and do not quit until the dawn of day; disturbing the inhabitants with their peculiar moaning or wailing, which is in some measure intermediate between a grunt and a howl. Parading the streets and penetrating into the houses in search of prey, they eagerly devour the offal of animals, the refuse of the daily meal, or whatever else that is in any way eatable may happen to fall in their way. Nothing, however filthy, comes amiss to their voracious appetites, which are indeed unbounded. They even break into the cemeteries of the dead, and tearing open the graves by means of their powerful claws, disinter the buried corpses, on which they glut that horrid propensity for feeding on carrion, which is at once the most striking and the most disgusting of their peculiarities. Their fondness for this polluted species of food, tends of course not a little to increase the natural antipathy with which they are regarded by the natives of the countries in which they abound, and renders them objects of peculiar detestation and abhorrence. The great size and strength of their teeth and the immense power of their jaws enable them to crush the largest bones with comparative facility, and account for the avidity with which they play upon the almost fleshless skeleton. In the daytime they retire into caves, from which they issue only when the shades of evening warn them that the hour for their depredations has arrived. Their gait is awkward and usually slow and constrained; when scared, however, from their prey, or when pursued by the hunter, they fly with tolerable swiftness, but still with an appearance of lameness in their motions, resulting from the constant bending of their posterior legs.

Notwithstanding the brutal voracity of his habits and the savage fierceness of his disposition, there is scarcely any animal that submits with greater facility to the control of man. In captivity, especially when taken young, a circumstance on which much depends in the domestication of all wild animals, he is capable of being rendered exceedingly tame, and even serviceable. In some parts of Southern Africa the spotted species, which is by nature quite as ferocious in his temper as the striped inhabitant of the North, has been domiciliated in the houses of the peasantry, among whom he is preferred to the dog himself for attachment to his master, for general sagacity, and even, it is said, for his qualifications for the chase. That the Striped Hyena might be rendered equally useful is highly probable from the docility and attachment which he manifests towards his keepers, especially when allowed a certain degree of liberty, which he shows no disposition to abuse. If more closely restricted, his savage nature sometimes returns upon him; and it is for this reason that those which are carried about the country from fair to fair, pent up in close caravans, frequently become surly and even dangerous.

CHYMISTRY.

In our previous volume, after having introduced the subject, we treated somewhat at length upon Attraction and Repulsion, on Mixture, Solution and Chymical Composition. Taking it for granted, that the high importance and interest of the subject is justly appreciated, we shall proceed in it, commencing as we promised with Chymical Decomposition. We hope our readers will be as highly pleased, as we are certain they will be instructed, if they give proper attention.

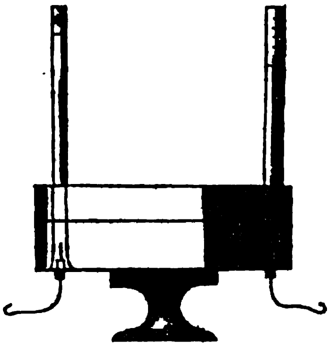
CHYMICAL DECOMPOSITION.

We have seen how *chymical decomposition* may be effected by *elective affinity*, or the superiour chymical attraction of one of two combined bodies for a third; and we have also seen that such decomposition may be brought about, in some cases, directly by the agency of heat. The agency of the voltaick pile* is, however, the most general and effectual known in disengaging substances of different natures from their combinations with each other. Such a degree of repulsion may be communicated by means of electricity, to the ultimate particles of matter of unlike kinds, as entirely to counteract the strongest chymical attraction between them; and bodies which resist this powerful agent of decomposition are deemed *simple* or *elementary*. Of the *cause* of this repulsion we know no more than we do of the nature of attraction: its *effect* may be understood from the following experiment.

Place a few drops of a saturated solution of Glauber's salt (sulphate of soda) upon a piece of paper stained with the blue colour of litmus; and also a few drops of the same solution upon another piece stained with the yellow colour of turmerick: connect the two portions of the solution by a few filaments of moist cotton, and place the positive wire of an active voltaick pile in contact with that on the litmus paper, and the negative wire with that on the turmerick paper. In a short time the litmus paper will exhibit a bright red, and the turmerick paper a deep brown stain; the former being the indication of the presence of an acid, and the latter of alkali. It will be recollected that we have described the composition of Glauber's salt from the action of affinity between sulphurick acid and carbonate of soda: by the decomposing action of the pile these are again disunited; and the soda appears at the negative and the sulphurick at the positive wire of the apparatus. This decomposition may be effected by a comparatively small power of electrick action; and a pile of fifty pairs of copper and zinc plates suffice for the purpose.

If soda, one of the products of the last experiment, be subjected to the action of a more powerful pile, a further decomposition will take place; an elastick fluid, oxygen, will be given off at the positive wire, and a substance endued with metallick lustre, will collect around the negative wire. This is the metal sodium: it is not susceptible of further decomposition, by the application of any power with which we are acquainted; and is therefore, ranked with the simple substances. When the action of the pile is discontinued, it again rapidly attracts oxygen from the atmosphere, and is reconverted into soda. Sulphurick acid, the other product of the decomposition of the salt, may also be resolved into its elements by the same agency; in which case sulphur will collect at the negative pole, and oxygen be given off at the positive. These experiments will only succeed with a powerful voltaick apparatus, such as it is not easy to meet with.

We shall give another instance of decomposition, which may be produced by the moderate electrick power previously referred to. Let the two wires of the voltaick pile, which for this purpose ought to be of platinum, be immersed in a vessel of pure water: the liquid will be decomposed; gaseous matter will be given off from each wire, but of very different properties, at the opposite extremities. It may be collected, by inverting glass tubes, closed at one end, and filled with water, over the wires, *fig.* 1.



The elastick fluids will rise into the tubes, and displace the water. The quantity collected over the negative wire will be double in volume to that collected over the positive wire. If a splinter of lighted wood be plunged into the first, (which may be done by dexterously inverting the tube, and keeping the open end closed with a finger, till the flame be introduced,) it will be instantly extinguished, but the gas itself will inflame at the surface. If into the second a splinter of wood, which, after being inflamed, has been extinguished, but still preserves a glowing point, be immersed, it will be instantly rekindled, and burn with great brilliancy; but the gas itself will not take fire. To the former elastick fluid the name of hydrogen has been given; the latter is oxygen. These two bodies are the elements of water; and, not being capable of further decomposition, in the present state of our knowledge, are reckoned simple substances.

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* The voltaick pile is composed of alternate layers of copper and zinc, with a piece of cloth between every two layers.

The peculiar mode of decomposition arising from *electrical repulsion* has afforded a basis for an artificial arrangement of the simple substances for the convenience of study; and by its means they are divided into two classes. The first consists of those elements which are attracted from their compounds with substances of the other class, by the positive pole of the voltaick pile; and as bodies in opposite states of electrical action attract one another, they may be called *electro negative* bodies.

The second comprises those elements which are attracted by the negative pole from similar combinations, and for the same reason may be distinguished as *electro positive* bodies. But this difference of electrical energies must be considered, in a great measure, as comparative; for in any compound of two bodies of the same class, for instance of the electro negative, one will be less electro negative than the other, and will consequently pass to the negative pole in the act of decomposition.

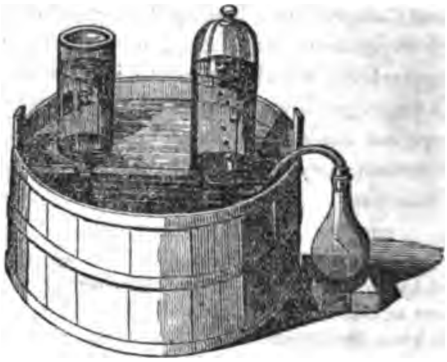
The elementary substances at present known, do not amount to more than between fifty and sixty, and of this small number is all the beautiful variety of terrestrial matter composed! and what is still more wonderful, a very small proportion only of this small number enter into the composition of those objects of infinite diversity which are most familiar to our senses; and many of them are of such rare occurrence, and in the present state of our knowledge apparently of so little importance in the frame of creation, that the sole purpose of their formation would almost appear to have been a display of that infinite Power, by which all things were produced, for the admiration and gratification of the diligent inquirer, and a stimulus to his pursuits.

There are four simple substances which exist in the gaseous state under the common circumstances of atmospherick temperature and pressure; these are oxygen, chlorine, hydrogen, and nitrogen. The first two belong to the *electro negative* class, and the last two to the *electro positive*.

Of these bodies, and of their combinations with each other, we shall proceed to give some account; but not in the order in which they stand above, as by departing from it in this instance, we shall have the advantage of treating, first, of the properties of some compounds which are every where presented to our observation; instead of commencing with others which are of rare occurrence, not easily produced, and not so perfectly understood. This will greatly facilitate the comprehension of the subject, and will amply compensate for any defect of arrangement.

OXYGEN.*

Before we proceed to show how oxygen gas may be obtained, it will be necessary to premise a few words upon the method of collecting and examining aeriform bodies. It is foreign to our design, as we have before stated, to enter into the niceties of chymical operations, or to describe all the beautiful contrivances which ingenuity has introduced into chymical apparatus, for ensuring the utmost accuracy in delicate experiments. Although such inventions are highly useful, and even necessary, in carrying on original investigations, they are by no means required for obtaining that general idea of the laws of chymistry which every one ought to possess, for the proper understanding of the commonest concerns of life, and which may be sufficiently illustrated by everyday occurrences, and easy experiments. In the way of apparatus, wine and beer glasses, of various sizes; apothecaries' vials; thin oil flasks, well cleaned; with glass and tin tubes of various dimensions; old gunbarrels; tobacco pipes; an argand and a spirit lamp, with a common fire and bellows, offer almost inexhaustible resources to a person endued with the faculty of contrivance; especially if he make himself master of the very easy art of sealing, bending, and enlarging a glass tube over a lamp.



For a collection of gases, sparingly soluble in water, a white earthenware foot-bath, or a small washing-tub, (*fig.* 2.) may be employed. In this a shelf should be fixed, on a metallick trivet stand, in such a way as that, when the bath is nearly filled with water, it may flow two or three inches above its surface. Glass jars, bell glasses, tubes, or bottles, may be filled with water by reclining them in the open part, and may afterwards be placed upon the shelf with their mouths downwards. A glass, or metallick tube, proceeding from the vessel containing the substances from which the aeriform fluid is emitted, may then be laid under the edge of the jar, which, for this purpose, is permitted to project a little over the shelf; the gas will then rise into it in bubbles, and gradually displace the water. A gas may also be readily transferred from one vessel to another, by carefully reclining a glass which contains it under the edge of another filled with water, and projecting over the shelf; and they may likewise be removed from the bath, and transported from one place to another, by placing them in shallow vessels or saucers, and surrounding them with about an inch of water. These operations are simple and easy; but no one should be disappointed in not succeeding in their performance, without some practice and perseverance.

We have seen that when the metal quicksilver (or mercury) is submitted for a considerable time, in communication with the atmosphere, to the action of heat near its boiling point, it is converted into a brilliant red substance, which was formerly known to druggists by the name of *precipitate per se*. In this operation the mercury increases its weight about 8 per cent.

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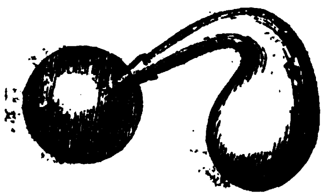
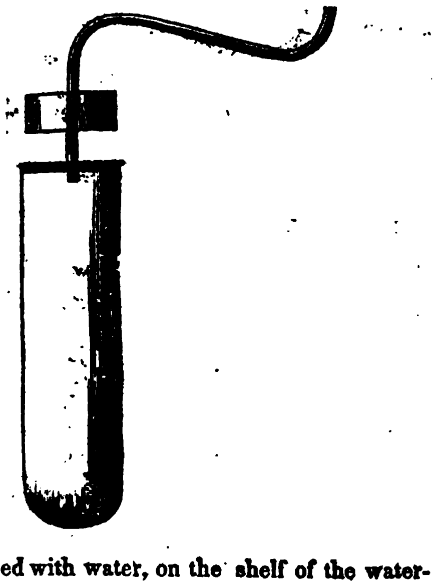
* Derived from two Greek words, signifying "the formation of acids," as oxygen enters into the composition of a large majority of the acids, and was formerly supposed to be the general acidifying principle.

The metal lead exposed to a strong heat with a large surface, and a free access of air is also converted into a bright red substance, commonly known by the name of *minium*, or red lead.

Both these substances, when exposed to a red heat, give out the oxygen, which they had previously attracted from the air at a lower temperature; this operation may be performed in a retort, or glass tube, (*fig* 3) sealed at one end, and a little extended by blowing into it, and bent at an angle, the heat should be gradually applied. For the production of the gas, the small open end of the retort should be placed under the edge of a vessel filled with water in the water-bath; in the figure it is represented as connected with a receiver for the purpose of distillation. Oxygen gas, may, however, be better obtained for examination from a salt known by the name of chlorate of potash. This may be placed in a glass tube, with one end closed, and the other fitted with a cork into which a smaller pipe is inserted, bent at a right angle, (*fig*. 4) and laid under the edge of a jar filled with water, on the shelf of the water-bath. When heat is applied, by means of a lamp, to this substance, it fuses, and gives out the gas in great purity. It may also be procured from saltpetre, or a substance known by the name of black oxyde of manganese, strongly heated in a gunbarrel, with the touchhole plugged up, and from which a small pipe of tin, or other substance, fitted to it, is laid under the jar. In collecting gases of any kind, the first portions should be always set aside as impure, as they are mingled with the common air which the apparatus necessarily contains.





Oxygen gas may also be collected in small quantities from growing vegetables, exposed to the solar light, or from the green matter which forms in stagnant pools by immersing them in a bell glass filled with water, or from some green vegetables immersed in a similar way.

Oxygen gas is colourless, without smell or taste, and may be breathed with impunity for a considerable time; but in its pure state is ultimately found injurious to animal life. It is not dissolved by water, except in very minute quantities. It is rather heavier than atmospherick air; 100 cubick inches of the latter weighing 30.5 grains, and of the former about 3 grains more or 33.8.

We will here explain, once for all, that in speaking of the weight of gases, we shall always suppose the barometer to stand at 30 inches, and the thermometer at 60°.

All combustible bodies burn in oxygen with increased splendour. If the glass which contains it be furnished at the top with a stopper, it will be easy to prove this by introducing substances in different states of ignition. They may conveniently be attached to a wire passing though a cork which is made to replace the stopper when withdrawn. A small piece of wax taper, with its flame blown out, but its snuff still redhot, upon being let down into it, will be instantly rekindled, and burn with great brilliancy.

A piece of charcoal attached to the wire and made redhot, burns most vividly, throwing out beautiful sparks.

If the wire which passes though the cork be made to terminate in a small spoon, a small piece of sulphur or phosphorus may be placed in it and kindled; they will burn in the gas with a splendour which the eye cannot bear.

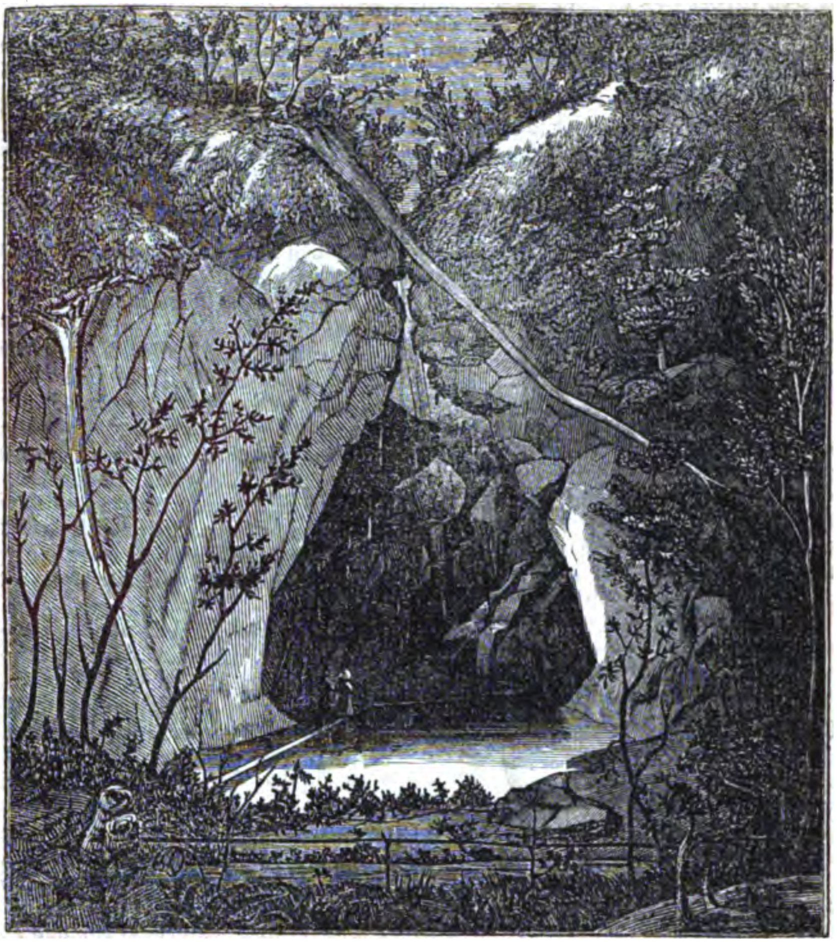
Twist some thin iron wire into a spiral form round a slender rod, which must then be withdrawn; let the end be dipped in melted sulphur and ignited; when let down into the gas, the iron will burn with a brilliant light, and scintillate like a firework.

If such a glass jar and stopper, as we have described, should not be at hand, these experiments may be performed in a common bottle, into the neck of which the cork and wire may be loosely inserted and which it will not be found difficult, with the assistance of a small funnel, to fill with gas over the water-bath.

The above are all instances of intense chymical affinity, during the action of which light and heat are given off in abundance. During the various processes the oxygen will disappear, and the substances with which it combines will proportionally increase in weight. It is not difficult to prove these facts in a general manner; but to perform the experiments with precision requires a complicated apparatus.

Coil up a known weight of iron wire, and place it in the bowl of a tobacco-pipe, the tube of which is connected with a bladder filled with oxygen gas; heat the wire to redness in the fire, and then force through it a stream of the gas from the bladder. The iron wire will burn; that is to say, it will combine with the oxygen, and from the intensity of the action, light and heat will be emitted. When weighed, it will be found to be considerably heavier than before, and 100 grains will have increased to about 130.

Oxygen is electro-negative with regard to every other known body, and is attracted by the positive pole of the Voltaick pile from all its combinations, even with substances of its own class.



DOVER STONE CHURCH.

We are happy to be able to present to our readers a very correct view of this great natural curiosity found at Dover Plains, Dutchess county, N. Y. We are much indebted to Mr. Ketchum, P. M. and Mr. Perry, proprietor of the Stone Church Hotel for their kind assistance in the matter. The Stone church is a singular and interesting curiosity, and its examination is worth a visit to Dutchess county. From June 1, to Dec. 1, 1832, there were about *eleven hundred* visiters to this place, and the number has been very great every season since.

In addition to the attraction which this curiosity presents to the wanderer from the heat and confusion of the city, Dutchess county itself is an excellent retreat, famous as it is for its fertile plains, teeming fields, and thrifty husbandry. The landscape scenery of the county is extremely pleasing, and the excellent roads afford many fine and very agreeable rides. The disciples of Izaak Walton may also find abundant sport with their angling rods in the crystal streams of this fine county. The following description of the Stone church, was given some time since, by a correspondent of the Evening Post :—

"It was not until a recent sojourn in the county of Dutchess, that I heard of the Dover Stone church, and from the description I received, soon resolved to make it a visit, though I was then at a distance from it. Nor were my expectations, which had been greatly elevated, disappointed in the least upon arriving there, except that the sublimity of the scene far surpassed the ideas I had formed. My greatest surprise was, that an object so truly worthy the attention of the curious, should have been suffered to remain so long comparatively unknown. This great work of nature is situated in the immediate vicinity of the delightful little village of Dover Plains, about twenty-two miles east of Poughkeepsie, from which place there is an excellent turnpike, leading through a most picturesque section of the country.

The Stone church consists of a fissure in the rock, on a declivity of the mountain, and near its base, through which passes a rippling streamlet, which in its passage down until it reaches the groundwork or floor of the church, forms numerous and extensive cascades, some of thirty feet in height, and from ten to fifteen in breadth. This current has been looked upon as the great architect of the work. The opening, though so narrow at the top, as to appear almost closed, gradually widens to its base so that it forms a vast arch of very considerable regularity, of perhaps twenty feet span and upwards. Its greatest depth is probably two hundred feet, and the inner or principal apartment (it being divided into two spacious halls) is about seventy feet in length, and is well lighted and aired from above. The antichamber, as it may be termed, or hall of entrance, is separated from the church by a huge mass of rock which has detached itself from the side or roof, and is aptly styled the pulpit. The view is well fitted to inspire feelings of devotion. The heart, touched by the religious gloom and sublimity of the place, acknowledges the power of the Creator and rises in admiration of his works.

Upon leaving the church we bent our way for about a mile to the southeast, where in a hollow of the mountains are to be seen a number of very beautiful *natural wells*, of various sizes, and depths, and of astonishing regularity of form, appearing almost to display the hand of art in describing their periphery. Many of these are accessible, and on our descent we were met by a gentleman with a fishing rod, who informed us that in some of these he found very excellent sport. As you ascend the mountain, the wells are seen at greater depths, until they attain to several hundred feet below the surface. The verge is well guarded by fallen trees and sapling rails, so that the sight may be enjoyed without the least degree of danger. Between the wells are large cascades, which add greatly to the grandeur of the scene, the foaming torrents of which afford a beautiful and striking contrast with the crystal clearness of the wells beneath. Here, as at the church, are found upon the fallen trees the records of the visiter, where, having inscribed our own also, we returned to the Stone Church Hotel, situated about a hundred yards from the church, where we partook of an excellent repast furnished by the enterprising proprietor, Mr. Perry, whose gentlemanly manners, together with the pains he has been at to render a visit to Dover agreeable and interesting, entitle him at least to this passing notice.

I should have mentioned that at the further extremity of the church is a magnificent waterfall, over which you may ascend by means of an artificial staircase to the height of forty or fifty feet, and that in the sides of the same are extensive ledges into which the spectator may place himself as in a gallery, so that the arrangement of the place naturally suggests the idea of a church, or place of worship.

PHYSICAL GEOGRAPHY.

Physical Geography, or natural geography as it is sometimes called, delineates all the leading features of nature; the mountains that diversify the surface of the land, and the seas that bound its outline; the valleys, the rivers, the caverns, the mines, and the volcanoes; the motions of the atmosphere and the laws of temperature; and lastly the distribution into their native regions of the animals, the vegetables, the minerals, and all the beings that are nourished in the exhaustless bosom of the earth.

This science as it leads the mind to contemplate rhe grandeur and majesty of nature, also acquaints it with the most important, most interesting and most astonishing facts. "Look abroad upon the face of the earth," in the language of Malte Brun, "behold what revolutions have taken place! What mountains have been dissipated! What rocks decomposed! How many valleys have been filled up, how many lakes emptied of their contents, what inroads have the seas made upon the continents; what volcanick irruptions, what contests among the elements, slow or rapid, destructive or creative. must have preceded the actual state of our globe, a state which every where presents only the ancient ruins of an edifice, of the primitive proportions of which we are completely ignorant. Physical geography makes us feel the limits of our powers. We have ascertained the dimensions of the sun. We know the laws of gravity upon the surface of Jupiter. We have measured the elevation of the mountains of the moon, even the erratick comets seem to submit to the calculations of our astronomers. But the interiour of that very earth upon which we walk, baffles our researches. We have never penetrated one two-thousandth part of the diameter of the globe. Nay, even the very surface of the earth is not known to us throughout its whole extent."

The surface of the globe is divided into large masses of land, which we call *continents*, and great cavities filled with water, which we term *seas;* as, in the parts covered with water, we observe small masses of land whose surfaces appear above it, which we name *islands*, so are there upon the continents small detached spots covered with water, which we call *lakes.* If the sea penetrate into the interiour of a continent, it forms there a *mediterranean*, or inland sea. If the extent of such seas be less, and the openings larger, they are called *gulfs* or *bays*. The still smaller portions of sea, surrounded as it were by land, and which afford a shelter for ships, are called *ports*, *creeks*, or *roads*. The first term means a secure asylum; the second is applied to ports of a much smaller size, and which when improved or completed by artificial aid, are styled *harbours*, and the roads afford only a temporary anchorage and security from certain winds. Tongues of land shooting into the seas, and connected with the mainland by only a small portion of their circumference, are termed *peninsular*. If the projections of land reach but a little way into the sea, they are called *capes*, *promontories*, or simply *points*. A natural canal communicating with the sea at both ends, and confined by two opposite shores, is called a *strait:* the reverse is an *isthmus*, that is, a tongue of land running between two seas, and by which two masses of land are united.

Considering the globe however, under one general point of view, it presents us with but two great divisions, land and water. The land is divided into two great continents; one of which, viz., the *old continent*, contains the three great divisions, Asia, Africa and Europe, while the whole of the new continent is comprised under the name of America. America is divided into two distinct peninsulas, and we agree with Malte Brun, that one of them ought in strict historical justice to be called Columbia after its immortal discoverer, Columbus. Some geographers are disposed to rank New Holland as a third continent; but it can properly be called only the largest *island* in existence. The water of the globe properly speaking, is but one great sea or continuous fluid surrounding the land, and all the gulfs and inland seas are but branches of this great universal ocean. The parts or branches of this great ocean are distinguished by names, only for the sake of convenience.

We shall adopt the following classification and geographical divisions, which are found in the Treasury of Knowledge; and we desire our readers to test or verify their simplicity and justness by a reference to an artificial globe or a map of the world.

I. The great basin of the Southern and Pacifick oceans, the waters of which cover nearly half the globe. It includes—

1. The *Antarctick Ocean*, which is comprised between the antarctick circle and the south pole.

2. The *Southern Ocean*, the boundary of which on one side is the antarctick circle; on the other, a line drawn from Cape Horn to the Cape of Good Hope; thence to Van Dieman's Land; and again by the south of New Zealand to Cape Horn. These two divisions are sometimes with propriety called the *Great Southern Ocean*.

3. The *Indian Ocean*, lying between Africa on the west, and the peninsula of Malaya with the islands of Sumatra, Java, &c. and New Holland on the east, and bounded by Persia and Hindostan on the north. The Red Sea or Arabian Gulf, the Persian Gulf and the bay of Bengal, are all parts of this ocean.

4. The *Pacifick Ocean*, divided by the equator into *north* and *south*, and enclosed between America on the east, and New Holland, the islands of Java and Sumatra, and the continent of Asia, on the west. On the north it terminates at Beering's straits. The seas of China, Japan, Okotsk, &c., form parts of this ocean.

II. The great Atlantick basin, forming a channel between the old and new continents. It includes—

1. The *Atlantick Ocean*, commencing in the south, from a line drawn from Cape Horn to the Cape of Good Hope, and terminated on the north by the arctick circle. It is divided into *north* and *south* by the equator, and its branches are the Mediterranean, the North Sea or German Ocean, the Baltick, Baffin's Bay, Hudson's Bay, the Gulf of Mexico, and the Caribbean Sea.

2. The *Arctick Ocean*, surrounding the North Pole, and bounded by the arctick circle, and the northern shores of the two continents. The White Sea, the Sea of Kara, and the Gulf of Obe, are parts of it.

The ocean is spread over nearly seven tenths of the globe; and the land and water are very unequally distributed between the northern and southern hemispheres. The following calculation will plainly exhibit this fact:—

Considering the whole space included in the northern part of the torrid zone, as equal to 1, the proportion of land is 0.297. On the same supposition, the proportion of land in the northern temperate zone is 0.559. And in the northern icy zone, 0.400. In the southern part of the torrid zone, the portion of land is 0.312. In the southern temperate zone, 0.075. In the southern icy zone, nearly none.

In other words, if the quantity of land in the northern hemisphere be represented by 16, the quantity in the southern will be scarcely equal to 5.

The general direction of the land in the two continents is entirely different. In America it is from pole to pole; in the old world it is from southwest to northeast. In both continents the direction of the large peninsulas is similar, almost all of them running towards the south. This is the case with South America, California, Florida, Alaska, and Greenland in the new world, and in the old, with Scandinavia, Spain, Italy, Greece, Africa, Arabia, *Hindostan*, Malaya, Cambodia, Corea, and Kamtschatka. The only exceptions are the peninsula of Yucatan in Mexico, and that of Jutland in the northwest of Europe. The two continents differ from each other very much in the character of their outlines, for while the coast of the old world is broken on all sides by gulfs, bays, and inland seas, the new world has a series of openings on its eastern shore only. Of its western side, the only inlet of any magnitude is the gulf of California.

MOUNTAINS.

Mountains form the most considerable eminences on the surface of the earth. They are to be distinguished, however, from "plateaus" or upland plains, which consist of great masses of elevated land commonly forming the centre of continents or of islands, but the sides of which are long and extended, with but little apparent declivity, like those of Tartary, Persia, centre of Africa, and Croatia and Carniola in Europe. In their exteriour forms, mountains present every possible variety and eccentricity. They are the romance of nature, the amazing products of nature's fancy-freaks which fill the human mind with wonder and awe. Here you observe them lying like an immense pillow upon the surface of the land, smooth and indicative of tranquillity: beyond, they rise in wild and abrupt peaks, with bald and rocky summits, with their sides torn open and broken, exposing as it were, the very entrails of the mountain itself, and some of its parts extending themselves like tremendous arms from the top of a perpendicular side threatening the terrified valley below with impending destruction. In another place, a vast amphitheatre is seen rising in majestick and regular gradations, like the Kinnegulla in West Gothland. In another direction you will see a large extent of country occupied by a confused collection of needles, peaks, teeth, cones, domes, breaches, &c., and which the mind need not be slow to picture to itself the intimate resemblances of all kinds and all parts of animals and beings created or imagined, from the tamest to the most disordered and wild. At the Cape of Good Hope you will find an altar; in Bohemia a labyrinth of rocks rising like pillars; in the province of Dauphine a monstrous ninepin; near Envionne in the Valais the figure of an old French frizzled wig; in the highlands of the Hudson the profile of the human face; in Massachusetts the exact resemblance of a saddle, and a sugar loaf; in short, mountains present every possible variety of exteriour form, from the sharp crystal like and pyramidal peaks, to slight elevations and gentle declivities.

Mountains *bored through*, is another eccentricity deserving notice; some of these perforations are so regular and complete, as to lead to the supposition that they have been accomplished in part at least by the industry of man. The Pierre-Pertiuse in Mount Jura, Pausilippo, near Naples, and perhaps the natural bridge in Virginia are instances of this kind. The Torghat in Norway is pierced by an opening one hundred and fifty feet high, and three thousand long. Near New Zealand there is a rocky arch through which the sea flows; *Isle Perce* in the Gulf of St. Lawrence, Doreholm in Shetland, and the Pictured Rocks on Lake Superiour are also instances of this kind.

Some mountains are completely insulated; some in groups, and others in chains. The rock of Gibraltar, the fortress of Gwalior in Hindostan, Mount Aornos, and the Peak of Teneriffe, are instances of the first kind—the Alps of the second, and the Andes and the Rocky mountains of the third. The term *chain* is applied to a series of mountains whose bases are continuous. Among the most remarkable are the Cordilleras of the Andes, which continue for thousands of leagues, nearly in one constant direction, having on both sides inferiour ranges, but sending off very few secondary chains. The declivities of mountains are various, and subject to no constant rule, some are rapid, others gentle, some rugged, others smooth, according to local circumstances.

By the separation of chains of mountains, most singular valleys are formed. "We see in the Pyrenees," says M. Raymond, "some valleys, whose salient and re-entering angles so perfectly correspond, that if the force which separated them were to act in a contrary direction, and bring their sides together again, they would unite so exactly, that even the fissure would not be perceived." Some are basins situated upon the top of a mountain; others highly situated contain rivers and lakes which have no outlets. Some are extraordinarily deep and narrow passages, commonly called passes or defiles, and by the French the "gates of nations." "Such were the passes of Caucasus, the Caspian passes, the pass of Issus, rendered celebrated by the victory of Alexander; that of Thermopylae, immortalized by the devoted patriotism of Leonidas and his band of Spartans; and the Candinae Turculae, where Rome saw the glory of her unjust arms deservedly tarnished." There is also a celebrated one between Sweden and Norway; one at "Portfeld;" the passage of the Hudson river through the highlands is similar; there is one also in the Rocky mountains near the head waters of the Yellowstone; but the Cordilleras present the most stupendous passes of this kind, that are known; they are, according to Humboldt, from four thousand to five thousand feet deep.

Plains, owing to their high elevation, have sometimes been considered as resting upon the "shoulders of the secondary mountains." The plains of Quito, for instance, are 12,000 feet above the level of the sea; and those of Karakorum, in Chinese Mongolia, are probably as elevated. The low plains, however, are of a different character, and seem many of them to have been once covered by the ocean, or to have been the basin of interiour seas. Such are the Tehama of Arabia, the Delta of Egypt, and the Caspian plains.

The shores of the sea, and of lakes, also deserve attention, as appearing to be the extreme limits of our chains of mountains. The seacoast is in some places abrupt and steep; as in Gallicia, Bretagne, Norway, and Scotland. In others we find it broken and notched, with clusters of small islands or rocks adjacent; such are the "garden of the king," and "of the queen," near Cuba, the archipelago of Mergui in India, the coasts of New South Wales, the Skiergard of Sweden and Norway. Some coasts are perpendicular, and are called the steep coasts; they are found in the Mediterranean and Black seas, and along the whole extent of the western coast of America. There are also coasts formed by undulating hills, and flat coasts formed by sands and depositions from the sea.

"The character of mountains would seem to depend upon the sort of rock of which they are composed. Granite, when exposed, forms lofty and rugged elevations; gneiss is much less precipitous, and slate commonly not at all so. In this respect there is a remarkable difference, which Humboldt has noticed, between the old and new continents. In the former, the highest points of the Alps consist of granite; but in America granite is not found higher than 11,000 or 12,000 feet above the level of the sea, and the newest floetz; trap or whinstone, which in Europe appears only in low mountains, or at the foot of those of great magnitude, covers the tops of the Andes. Chimborazo and Antesana are crowned with vast walls of porphyry; and basalt, which in the old continent has not been observed higher than 4,300 feet, is on the very summit of Pichinca. Other secondary formations, among which may be mentioned limestone, are also found at greater heights in the new than the old world.

The following is a table of the height of some of the principal mountains on the globe, reckoning from the level of the sea.

EUROPE.

Mount Blanc,	Alps,	15,668
Mount Rosa,		15,527
Jungfrauhorn,		13,730
Wetterhorn,		12,500
Pass of Gt. St. Bernard,		7,968
Do. of Mount Cenis,		6,778
Do. of the Simplon,		6,580
Nethon,	Pyrenees	11,427
Perdu,		11,275
Monte Corno, (Appenines,)		9,523
Etna,* in Sicily,		10,870
Vesuvius, near Naples,		3,932

ASIA.

Dhawalagari,	Himalaya,	28,077
Jewahir,		25,747
Monna Roa, (Sandwich Islands,)		15,988
Ophir, (Sumatra,)		13,840
Egmont, (New Zealand,)		11,430
Ararat, (Armenia,)		9,600
Awatsha,* (Kamtschatka,)		9,600
Lebanon, (Palestine,)		9,600

AFRICA.

Geesh, (Abyssinia,)	15,000
Atlas, (Morocco,)	11,980
Peak of Teneriffe,*	12,180

AMERICA.

Chimborazo,	Andes,	21,425
Antesana,*		19,136
Cotopaxi,*		18,867
Pichinka,		15,931
Popocatepel,*	Mexico,	17,720
Iztaccihuatl,		15,705
Lake of Tobica,		12,195
Silla de Caraccas, (Venezuela,)		8,633
Itacolumi, (Brazil,)		5,756
Mount Washington (New Hampshire,)		6,650
Blue Mountains, (Jamaica,)		7,278
Mount St. Elias,		17,863

It is remarkable that in the old continent the principal chains of mountains contain no volcanoes, and that islands, and the extremities of peninsulas, are alone the seats of these convulsions; while in the new world, the immense range which runs along the shore of the Pacifick ocean possesses more volcanoes, than are found in the old continent and its adjacent islands.

Professor Jamieson has given the following estimate of the number of volcanoes:—

Continent of Europe, - - - - -	1
Islands of do. - - - - -	12
Continent of Asia, - - - - -	8
Islands of do. - - - - -	58
Continent of America, - - - - -	97
Islands of do. - - - - -	19

No volcano has yet been discovered on the continent of Africa, but most of its groups of islands are distinguished by them.

These marked * are volcanoes.

Several mountains bear evident marks of having, at some distant period, been the outlet of fires; and on this account they are called *extinct* volcanes.

It has sometimes happened, that new islands have been formed during *submarine* eruptions. An instance of this kind occurred in 1811, in the neighbourhood of St. Michael, one of the Azores, which lay about 800 miles west of Portugal. This new island has since disappeared; more recently a new island has appeared in the Mediterranean, near the island of Sicily, which disappeared after the lapse of a few months.

A considerable portion of the islands of the globe, are found to be of volcanick origin.

Many islands, especially those in the South Sea, owe their origin to the marine insects which produce the coral. Some, are banks of sand, just raised above the surface of the water."

BIOGRAPHY.

MEMOIR OF JACOB PERKINS.

BY SAMUEL L. KNAPP.

Jacob Perkins was born at Newburyport, on the ninth day of July, 1766. His father was Mr. Matthew Perkins, a descendant, in the third generation, of one of the first settlers of Ipswich, which is one of the oldest towns in Massachusetts, and has, ever since its settlement, been remarkable for the longevity of many of its inhabitants. This gentleman died many years since, nearly ninety years of age. He retained his mental and corporeal faculties in a wonderful degree, until the last days of his life. He was a man of a strong mind; an industrious, good citizen, and a careful father, but brought up his children in the strict school of Presbyterian discipline. Jacob early discovered marks of an inquisitive mind; for before he had learned his letters, he chanced to get into his possession a large watch, which he opened with great care, and for a long time listened to ascertain what made the noise in it

His mother found him with it, and hastily took it from him, thinking he must have done it some injury; but the child earnestly requested her to let him have it again, when he was a bigger boy, that he might see what made the noise. As soon as he could read words of three syllables, he was sent to the publick school, and was kept there until he was twelve years old. The schoolfellows of Perkins speak of him as a smart boy at that time, who was fair in all play, yet he was sure to be among the first in every game in which children amuse themselves. At twelve years of age he was sent as an apprentice to a Mr. Davis, of Newburyport, a goldsmith, to learn the art and mysteries of the trade. This was considered the best situation for the development of the lad's talents for the mechanical arts. His opportunities for acquiring information were, however, small, and these advantages, such as they were, did not continue long, for Davis died when Perkins had only served out three years of his apprenticeship.

This was a trying period for him, then a youth of fifteen years of age, panting for knowledge, and desirous of reaching the metropolis to find instruction in his profession; but he made up his mind to carry on the business of the shop, and this determination he religiously fulfilled; and the establishment, during the remaining years of his apprenticeship, was more lucrative than it was in the life time of his master. Gold beads were then worn on the neck of every class of respectable females, from the aged dame with Bible and spectacles, to the laughing and buoyant damsel of fifteen; of course there was an extensive market for this article; the workmanship of his beads was of the highest order; the honesty of so kind and faithful a young man was never questioned, nor could be, and the shop was the resort of all who wanted to purchase. This was a fortunate commencement; for people of every grade, from king Hiero, to the simplest maiden, whose industry had just reached the happiness of seeing a string of pure and shining gold upon her spotless bosom, dislike to be duped in matters of ornament, more particularly, perhaps, than in any other. Shoebuckles were then universally worn by all ages and classes, and Perkins turned his attention to the manufactory of them, and soon discovered a method of plating them, entirely new, by which he could bring his work into the market at less prices than the imported ones of equal goodness and beauty could be afforded.

But the fashion of this ornament soon passed away, and so entirely, that for the last thirty years scarcely a pair of buckles has been seen, and then only when worn by some pertinacious adherent to antiquated dress.

During the old confederation, each state had a right to coin money for itself; Massachusetts had a mint, from which was issued copper coin only, stamped with the arms of the commonwealth. The art of making dies for this coinage was then, with us, in its infancy; and it was with great difficulty that a mechanick could be found, of sufficient skill, to undertake the task. After numerous failures of others, Perkins was employed by government, when he was but twenty-one years of age, and succeeded to the satisfaction of the master of the mint, the late Ebenezer Hancock, Esq., from whom the writer had this information. At twenty-four he invented the nail machine, which cut and headed nails at one operation.

This was the best labour-saving machine that had ever been in use among us. Those, at first doubtful of its success, were at length convinced of the great utility of this invention; and it was generally considered as the sure foundation of the inventor's fortune and fame. Great offers were made him for a share of the patent. This was, indeed, a wonderful machine; such celerity of motion, such power of execution, such a combination of mechanical principles, had rarely, or never, been seen in this country. Those who foretold the success of the invention were right—time has proved it; but those who thought that great advantages would result from it, to the inventor, forgot that knaves might reap what industry sowed, and bargain-making men enjoy what genius had created. At this time, two unprincipled adventurers from abroad, with the appearance of great wealth, engaged with Perkins in erecting a factory for putting the machine in operation on a large scale. The works were auspiciously commenced, and continued to answer the expectations of the publick for a year or two, and were becoming more perfect every day, under the superintendence of Perkins; when it was discovered by him that his copartners had but little money, and less honesty, and that their credit was lost. The establishment was sold by them, and Perkins was suddenly left with the loss of all his hard labours, and the property he had put in the concern. This was not all; they left debts for which he was answerable, without any means for their payment. This disaster plunged him into the most extraordinary and vexatious embarrassments. By the assistance of his friends, however, Perkins soon overcame these difficulties and started with fresh vigour to apply his mind in his profession, and was successful in almost every thing he undertook, so far as to show that he seldom pursued an inquiry without some beneficial result to the publick. A set of liberal men had purchased the factory he and his copartners had abandoned, who employed him to put the factory in operation, and to add some improvements to the old works. This did much to amuse him, until he found other business, and they knew and acknowledged, in a proper manner, the value of his services.

The evil of counterfeit bank notes, in the market, was severely felt by all classes of people. The ingenuity of Perkins was called into requisition to avert in some degree this sore vexation and calamity. Nothing could be more difficult than to stop the practice of counterfeiting by detecting the authors of it; they flee from one place to another at a great distance from each other, with such security in a thinly-settled country, and find so many facilities in getting off spurious bills, that the race can never be extirpated by the terrours of the law, nor the vigilance of the police; something, therefore, was to be done, which would give the most ignorant in the community some guide by which he might determine, in some cases, the spurious from true bills.

This was a progressive labour. The experiment was first made by a small stamp on the common bills; this answered a very good purpose, for the stamp was seldom imitated. Afterwards, the check plate was used, which was one of the best preventive of deception that we ever had. Even the race of counterfeiters never tried to imitate this plan, or never, with the slightest success: and in their flash language to one another, they bear testimony to its excellence, by often saying, that they had such a sum of money in *bank bills*, and so much in *check backs;* or sometimes, *striped backs*—giving their associates to understand by these latter terms, how much good and genuine paper they had in their possession; and many of them, when detected and condemned, and could have no farther interest in the prosperity of the trade, have declared the fact, that they could do nothing with these plates. The publick prosecutors have uniformly stated, that they never had made an indictment on an imitation of this plate. The bills were rather thick and clumsy, and of course, not of easy management in the banks; and others of a thinner sort were preferred. Many banks adopted the plate from the belief of the security in it.

A self-taught man, in his progress to knowledge, has a thousand difficulties to contend with, that the regularly educated man does not meet. Instead of having rules, principles, and axioms, stored in his memory for use, he has to form, as it were, his own alphabet of the sciences and the arts he is striving to understand. The elementary principles which have been discovered and fixed for ages, are but little known to him. He becomes the true inventor of many things, when, perhaps, the original inventor lived ages before him, and may have been forgotten. Much time is therefore spent in toiling up to the knowledge of his own time. This exertion may strengthen the powers of his mind, but it certainly consumes some of the best years of human life; and after all, he has, probably, imbibed numerous errours in philosophy, which have been detected, and their fallacy proved to the learned and scientifick, long before he existed. Perkins deeply felt this want of early instruction; he knew there must have been many things settled which he was trying to discover, but he did not know where to find them. A man of genius without the light of knowledge, resembles Samson when his vision was extinguished, but his hair had grown, groping, in vain, for objects on which his supernatural gift might be tried. When Perkins was young, there were but few good books on natural philosophy in this country, and those, perhaps, not within his reach. Lectures were given at the several colleges, but they did not contain much information, compared with those of the present day, and these were chiefly confined to professors and students. The exact sciences were but slightly regarded at that period by many men of learning. The taste has changed, and there is a strong desire for this kind of knowledge in almost every profession; and, in truth, philosophy has been brought to the common cares of life, with wonderful success.

The growth and progress of a great mind, depend much on the place where a man's lot is cast in early life, and the rank he holds among his fellow men. The birthplace of Perkins was, in many respects, friendly to a mind like his. Retirement is the nurse of thought; he had, in that place, sufficient opportunities for deep and uninterrupted reflection. It was a busy, thriving town, with a population of six or seven thousand souls. The people, in general, were very intelligent, and some of them, especially in the professions, men of much erudition. The mass of the inhabitants were sober, honest, and religious. industriously engaged in their own pursuits; they never disturbed him by vague and unnecessary inquiries about his discoveries, but waited until he was ready to communicate them. He was in this place equally removed from the excitement and idle curiosity of a great city, and the peering inquisitiveness of a small village. Among these relations, friends, and townsmen, if he had not much to fire his ambition, he had nothing—after his first embarrassments were removed—to disturb the current of his thoughts; nothing to crush his hopes, or to mortify his spirits. He was known to all, connected with many, respected by most, and associated with the best; from boyhood he maintained, and augmented the favourable impressions he had made on the publick mind for talents, and his name was as familiar to every child, for superiour ingenuity, as the dial which the urchin watched to mark the moment for his school to begin. The literati of the town were among his warmest admirers and friends, and if he did not get much information from them in his own pursuits, he received many other advantages of perhaps equal value; they were the guardians of his fame; their opinions and friendships were a shield to his reputation, when assailed by the envious and carping, among those engaged in similar pursuits.

The latter years of the residence of Perkins in Newburyport and Boston, were occupied on subjects so numerous and various, that it would be impossible, for any one, but himself, to give an accurate detail of them, or hardly make out a full catalogue of his inventions and improvements. The method he discovered of softening and hardening steel, at pleasure, increased the interest the community had taken in his check-plate for security against counterfeiting. This discovery has produced many fortunate results, and opened a great field for his labours. The softness of copperplates, which requred often retouching, precluded the possibility, by these means, of producing a perpetual similarity in dies for bills, or other use; but this invention has effected the object practically, if not mathematically.

The king of Siam never expressed greater surprise and incredulity, when told by the Dutch ambassador, that in Holland water became so hard, at times, as to be sufficiently strong to bear all his royal elephants, than did the philosophers of Europe and America, when Perkins first maintained the doctrine of the compressibility of water. He for a long while doubted the old philosophy, but made a series of experiments, before he dared risk his reputation on a full avowal. His perseverance is now amply rewarded by a general belief in this phenomenon. This discovery led to the invention of his bathometer, an instrument, as its name denotes, to measure the depth of water—and his pleometer, which marks with precision the rate at which a vessel moves through the same element.

Every man, who knows Perkins, and is capable of judging of his merits, cannot but place his intellectual powers in the first class of mind, but common observers have frequently thought him dull and plodding—a man who built up his fame by slow and patient drudgery; but they do not know him. It is true he is patient and laborious, but it is also true that he possesses that divine *impulse* of the mind which cannot be measured, nor exactly analyzed; that *power* which creates, combines, and felicitously arranges all it acts upon; that *faculty* of the soul which leaves all things of a common cast and seems to go on as if ordained to develop the great laws of creation. There was much of the "*mens divinior*" in him who first used the alembick, or invented numbers and pursued them to the higher branches of mathematicks, or taught the extent, and the charms of algebraick calculation, as in those who have produced the sublimest efforts of taste, in poetry, sculpture, and painting. The ethereal spirit which lighted up the soul of Archimedes was as intense, as pure and hallowed, and came as directly from the great fountain of light and intelligence, as that which warmed the breast of Homer. The poets, painters, sculptors, and orators, are not the only sons of God by the daughters of men: the philosophers and inventors—that have made

"———— fire, flood, and earth,
The vassals of their will,"

for the benefit of mankind, have an equal birth claim in the heraldry of nature.

Simplicity is the striking characteristick of the habits and manners of Perkins; and his methods of reasoning are all of the same cast; he begins upon a subject, whatever it may be, with calmness and serenity, and though constantly "on the rack of invention," he seems in a revery, on a bed of flowers. Invincibly persevering until he is certain that he can accomplish what he has undertaken, he often leaves the design to be carried into execution by some one to whom he accidentally imparts the information, and, probably, the first he knows of the advantage of his invention is through the medium of the altered condition, and perhaps consequential airs of the creature who had grown up by catching the offals of his genius. Smaller animals often feed on the prey the lion has hunted down.

To his brother artists, Perkins always showed the most delicate attention; and, notwithstanding he was teazed by them, to examine and recommend their inventions, as often, and as pertinaciously as the bard of Twickenham, by his rhyming brothers, yet he never lost his patience, or ordered the door to be shut, the knocker tied up, nor charged his workmen to say that he was sick or dead; he felt no jealousy of them, and would do much at any time to oblige them, if they were tolerably clever in their business. He was modest and quiet, but did not think humbly of his own capacity; not that he ever assumed a tone of superiority, or discovered any self-conceit, but he always indulged ardent hopes, and it would not be going too far to say, a fixed belief, that he should find something in his course which would lead to fame and fortune. When entreated by his friends, as he often was, to control his disposition for invention, and attempt to turn some of his numerous matters, already in operation, to pecuniary account, he quietly answered, that he was, in his own opinion, still an apprentice in his profession, and must do something more before he should be satisfied to set up for himself; and, he sometimes modestly intimated hopes that England would be the theatre on which he should act his part.

There never lived a man more destitute of selfishness, or more prodigal of his labours for publick good; but it generally happens that, in views and feelings too expanded, a very particular attention to ordinary and everyday matters is not readily found; Perkins wanted such a man as Franklin was, for his friend and companion, with his maxims on prudence, thriftiness, punctuality in pecuniary settlements, and all the economical philosophy of "Poor Richard;" and such a sage might in return, have been paid for his friendship, by purity of feeling, singleness of heart, and an exhaustless fund of intellectual wealth.

Perkins never made any complaint of the neglect of the world, or its ingratitude, which is so common to men who are sometimes not sufficiently appreciated. In every strait and difficulty he found one friend that was never weary—such a one as is seldom seen or known—one who never obtruded his advice, never sought him to share his fame, or followed him to mingle with his associates for pleasure or pride, nor kept near him to speculate on his credulous generosity—but a man of good affections and an excellent understanding, who came when the funds of his friend were low, and his pulse sinking with disappointment, to lend his name to the bank and relieve his mind from the load which oppressed him; all this was done with such delicacy and gentleness as greatly to enhance the value of the service, and to give new charms to the fraternal tie—for this was a younger brother; and the vicissitudes of fortune have given the elder an opportunity of showing a similar disposition. For several years before Perkins went to England, he had resided in Philadelphia, a city in which the arts, sciences, and letters were highly patronized.

Mr. Perkins has now been several years in England. At the commencement of his career, he was hailed by all classes with enthusiasm; he was encouraged to go on, and has, we trust, received honour and reward from a people who have given him a fair opportunity to exhibit his powers; the British nation have been just to his merits, without asking how long it is since his ancestors left their shores. Perkins has no political account to settle with any body of men, for he always considered himself as a citizen of the world. Science was his pursuit, usefulness his object; and although he enjoyed his own opinions and exercised his rights, yet he never stopped to join a party or to warm himself by political excitements.

Since Perkins has been in England, his fame and usefulness have greatly increased; still, however, disappointments and vexations, the everlasting concomitants of genius, have fallen to his lot. The publick are now in possession of a sufficient number of his inventions, which have been practically tested, to ensure him a permanent reputation; but he is not content with what he has already done, for every hour bears witness to some new struggle by him, in the world of invention, and the last is more gigantick than any former one.

He has a compact, athletick frame, a strong constitution, and sprang from a longlived race of hardy men; therefore we may indulge a hope that he will have opportunities of doing much before he passes the boundaries of active life. May it be so decreed—and the remotest nations enjoy the benefit of the labour of one whose track to glory was bloodless, and whose elevation never gave the human heart a pang, nor drew from mortal eye a tear.

NOTE.—Mr. Perkins had a safety steam-engine manufactory near the Regent's Park, London. It is doubtless well known that about ten years since, he invented that wonderful specimen of human ingenuity and destructive power the steam gun. This extraordinary invention at once attracted the attention of the first men in England, and a committee of engineer and artillery officers was appointed by the Duke of Wellington to examine it. Mr. Perkins was accordingly visited by that committee, accompanied by his grace the Duke, the Master General of the Ordnance and his staff; the Marquis of Salisbury, Mr. Peel, Sir H. Hardinge, Lord Fitzroy Somerset, the Judge Advocate General, and many military officers of the highest rank. Mr. Perkins's experiments excited amazement and admiration in every witness. "At first," says an English paper, "the balls were discharged at short intervals, in imitation of artillery firing, against an iron target, at the distance of thirty-five yards. Such was the force with which they were driven, that they were completely shattered to atoms. In the next experiment the balls were discharged at a frame of wood, and they actually passed through eleven one-inch planks of the hardest deal, placed at the distance of an inch from each other. Afterwards they were propelled against an iron plate one fourth of an inch thick, and at the very first trial the ball passed through it. On all hands this was declared to be the utmost effort of force that gunpowder could exert. Indeed, we understand that this plate had been brought specially from Woolwich for the purpose of ascertaining the comparative force of steam and gunpowder. The pressure of steam employed to effect this wonderful force, we learnt, on inquiry, did not at first exceed 65 atmospheres, or 900 lbs. to the square inch; and it was repeatedly stated by Mr. Perkins, that the pressure might be carried even 200 atmospheres with perfect safety. Mr. Perkins then proceeded to demonstrate the rapidity with which musket balls might be projected by its agency. To effect this, he screwed on the gun-barrel a tube filled with balls, which, falling down by their own gravity into the barrel, were projected one by one, with such extraordinary velocity, as to demonstrate that, by means of a succession of tubes, filled with balls, fixed in a wheel, (a model of which was exhibited,) nearly one thousand balls per minute might be discharged. In subsequent discharges or volleys, the barrel, to which is attached a moveable joint, was given a lateral direction, and the balls perforated a plank nearly twelve feet in length. Thus, if opposed to a regiment in line, the steam gun might be made to act from one of its extremities to the other. A similar plank was afterwards placed in a perpendicular position, and in like manner, there was a stream of shot-holes from the top to the bottom. It is thus proved, that the steam gun has not only the force of gunpowder, but also admits of any direction being given to it. But what seemed to create most surprise was the effect of a volley of balls discharged against the brick wall by the side of the target. They absolutely dug a hole of considerable dimensions in the wall, and penetrated almost one half through its thickness. We heard several officers declare their belief, that had the balls been made of iron instead of lead, they would actually have made a breach through it—the wall was eighteen inches thick."

Perkins is still in England, and his industrious ingenuity is still employed in multiplying useful inventions and improvements in the mechanick arts.

The highest perfection of human reason is to know that there is an infinity of truth beyond its reach.

ASTRONOMY.

THE FIXED STARS.

The mechanism of the universe; the worlds that fill it; the motions and the laws of the whole and of the various parts; their relations to each other, and the design of the Creator of the whole in connexion with the destiny of mankind, furnish one of the sublimest portions of study and science, which can attract the attention of the human mind. It is interesting, as it is sublime, and beautiful as it is inexhaustible. It has an amplitude and scope, whose limits the imagination cannot circumscribe; depths, which human reason cannot fathom; complexities which it cannot unravel; but a sublimity and beauty which the mind cannot cease to wonder at and admire. But while we are struck with the amazing splendours of the heavens, and attempt to fathom their abysses, the mind is discouraged with the futility of the effort, and reverts to that insignificant portion of the universe which we are destined to occupy. For notwithstanding, we have determined the laws and motions of the earth, the sun, moon, and planets, yet we are in comparative ignorance of the other worlds and systems which are visible in the heavens, and indeed the imagination is lost when it ventures even beyond the planets. The mind, however, congratulates itself upon a progressive improvement in its knowledge of the universe. Pythagoras was esteemed a crazy man by his contemporaries, for adhering to his plan or suggestion in relation to the solar system; and the world chose rather to remain in ignorance of the relative motions and distances of the sun and planets, than to stretch their credulity to the purposes of the great astronomer. It was reserved for the immortal Copernicus more than 2000 years after, to revive the Pythagorean system and establish it upon a permanent foundation; this is the true system and universally received at the present day. But since Copernicus, what astonishing discoveries have burst in rapid succession upon the world! The instruments which genius has devised have as it were brought down the heavens for the purposes of inspection and admeasurement! In addition to what was already known, we have ventured farther into the heavens, and determined the distances of the stars, their motions, variations and retrogradations, changes, relative distances, the causes of nebulous appearances, and assigned certain determinate places in the heavens to those that are *fixed*, and given them names, separately, and in constellations. Instead of observing but about 1000 in the heavens with the naked eye, we apply our instruments and the skies are filled with numbers, great, beyond all conception, and some of them at a distance of 11 trillions of miles! Some which appear to the naked eye to be but single, are in fact, double and triple stars.

Fixed stars are known from the planets by their twinkling. They are called *fixed* and luminous, because they appear to have no proper motion of their own, and if their light were reflected it would be too weak to reach us. Doubtless their various apparent magnitudes cannot properly be classed, since there must be as many differences in magnitude as there are stars. It is not probable that the real magnitude of the fixed stars can ever be ascertained with certainty; we must be content with an approximation deduced from their annual parallax and a comparison of the light which they afford with that of the sun. The number Dr. Halley believes to be infinite.

"Light," says Biot, "employs more than three years in passing from the stars to us. The stars whose light seems to break forth at once in the heavens, must have existed long before they are perceived; and in some instances their light is still seen long after they have vanished from their places. Perhaps there are some stars so distant that their light has not yet reached us; others perhaps ceased to be, millions of ages ago, while their light is still seen in the places they once occupied in the heavens.

"It is evident that the stars undergo considerable changes, since their changes are sensible even at the distance at which we are placed. There are some which gradually lose their light, as the star δ of Ursa Major, others, as β of Cetus, become more brilliant. Finally, there are some which have been observed to assume suddenly a new splendour, and then gradually fade away. Such was the new star which appeared in 1572, in the constellation Cassiopeia. It became all at once so brilliant that it surpassed the brightest stars, and even Venus and Jupiter when nearest to the earth. It could be seen at mid-day. Gradually this great brilliancy began to diminish, and the star disappeared in sixteen months from the time it was first seen without having changed its place in the heavens. Its colour during this time, suffered great variations. At first it was dazzling white, like Venus; then of a reddish yellow, like Mars and Aldebaran; and lastly of a leaden white, like Saturn. Another star which appeared suddenly in 1604, in the constellation Serpentarius, presented similar variations, and disappeared after several months. These phenomena seem to indicate vast flames which burst forth suddenly in these great bodies. Who knows that our sun may not be subject to similar changes, by which great revolutions have perhaps taken place in the state of our globe, and are yet to take place." Some stars, without entirely disappearing, exhibit remarkable increases and decreases of light in regular periods, and are hence called *variable stars*.

"The ancients," we employ the language of Blair, "that they might the better distinguish the stars with regard to their situation in the heavens, divided them into several constellations, that is, masses or clusters of stars, each mass consisting of such as are near to each other. And to distinguish these groups or systems from each other, they gave them the names of such men or things as they fancied the space they took up in the heavens represented. To these, several new constellations have been added by modern astronomers.

The ideal delineations of those figures of animals and other objects, which include the *constellations* or *asterisms*, are dispersed all over the heavens, and a particular situation is assigned to each, as may be seen upon a common celestial globe, or upon a planisphere or map of the heavens; yet some spaces in the heavens remained here and there, which according to the ancient distribution of the stars were out of the bounds of the contiguous constellations. The stars which were included in those spaces were called *unformed stars;* but, as represented on the modern celestial globes, the constellations are made to comprehend all the unformed or extra-constellated stars.

Besides the names of the constellations, the ancient Greeks gave particular names to some single stars, or small collections of stars. Thus, the cluster of small stars in the neck of Taurus, the Bull, was called the *Pleiades;* five stars in the Bull's face, the *Hyades;* a bright star in the breast of Leo, the *Lion's Heart*, or *Cor Leonis;* and a large star between the knees of Bootes, *Arcturus*, &c. Several of the brightest fixed stars have also particular names, as Sirius, Aldebaran, Regulus, Castor, Procyon, Alioth, &c.

As it would be an endless task to give a proper name to each star, astronomers, in order that the memory may not be burdened with a multiplicity of names, denominate the stars of each constellation by means of the letters of the Greek alphabet, which are applied to them according to their apparent relative size. The principal or brightest star in the constellation is designated by α, *Alpha;* the next in brightness, by β, *Beta;* the third, by γ, *Gamma;* and so on. When the number of stars in a constellation, exceeds the letters in the Greek alphabet, the letters of the Roman alphabet, a, b, c, d, &c. are applied to the remaining stars in the same manner; and when these are not sufficient, the numbers, 1, 2, 3, 4, 5, &c. are used to designate the rest in the same regular succession; so that by these means, the stars may be readily known and spoken of with as much ease as if each had a separate name.

The celestial sphere is usually divided into three portions, the *zodiack*, and the *northern* and *southern hemispheres*, or more properly the two regions to the north and south of the zodiack. Astronomers have accordingly divided the constellations into three classes, called the *northern*, the *southern*, and the *zodiacal*. The number of northern constellations is 37, of the southern 47, and of the zodiacal 12; making 96 in the whole. The ancient astronomers reckoned only 48 constellations—12 in the zodiack, 21 to the north, and 15 to the south. Modern astronomers, however, by curtailing several of the ancient constellations of some of their stars, which they distributed into new constellations, and by arranging into constellations the unformed stars, or those which were between the ancient constellations, have increased their number to 96, as above stated.

The term *zodiack* is derived from a Greek word signifying an animal, because most of the constellations in that zone, which are twelve in number, are represented by the outlines of the figures of animals; as, *Aries*, the Ram; *Taurus*, the Bull; *Gemini*, the Twins: *Cancer*, the Crab; *Leo*, the Lion; *Virgo*, the Virgin; *Libra*, the Balance; *Scorpio*, the Scorpion; *Sagittarius*, the Archer; *Capricornus*, the Goat; *Aquarius*, the Water-bearer; and *Pisces*, the Fishes.

The luminous part of the heavens, called the *Milky-Way*, consists of fixed stars too small to be seen by the naked eye. In a paper on the construction of the heavens, Dr. Herschel says, "It is very probable, that the great stratum called the Milky-Way, is that in which the Sun is placed, though perhaps not in the centre of its thickness, but not far from the place where some smaller stratum branches from it. Such a supposition will satisfactorily, and with great simplicity account for all the phenomena of the Milky-Way, which, according to this hypothesis, is no other than the appearance of the projection of the stars contained in this stratum, and its secondary branch."

In another paper on the same subject, he says—"We will now retreat to our own retired station in one of the planets attending a star in the great combination with numberless others; and in order to investigate what will be the appearances from this contracted situation, let us begin with the naked eye. The stars of the first magnitude, being, in all probability the nearest, will furnish us with a step to begin our scale; setting off, therefore, with the distance of Sirius or Arcturus, for instance, as unity, we will at present suppose, that those of the second magnitude are at double, and those of the third at treble the distance, and so forth. Taking it then for granted, that a star of the seventh magnitude is about seven times as far from us as one of the first, it follows that an observer, who is enclosed in a globular cluster of stars, and not far from the centre, will never be able, with the naked eye, to see the end of it; for since according to the above estimations, he can only extend his view about seven times the distance of Sirius, it cannot be expected that his eye should reach the borders of a cluster, which has perhaps not less than fifty stars in depth every where around him. The whole universe, therefore, to him, will be comprised in a set of constellations, richly ornamented with scattered stars of all sizes. Or, if the united brightness of a neighbouring cluster of stars should, in a remarkably clear night, reach his sight, it will put on the appearance of a small, faint, nebulous cloud, not to be perceived without the greatest attention. Allowing him the use of a common telescope, he begins to suspect, that all the milkiness of the bright path which surrounds the sphere may be owing to stars. By increasing his power of vision, he becomes certain that the Milky-Way is, indeed, no other than a collection of very small stars, and the nebulæ nothing but clusters of stars."

There are spots in the heavens, called *nebulæ*, some of which consist of clusters of telescopick stars; others appear as luminous spots of different forms. The most considerable one is that which is about midway between the two stars on the blade of Orion's sword, marked θ by Bayer, and discovered in the year 1656 by Huygens. It consists only of seven stars; and the other part is a bright spot upon a dark ground, and appears like an opening into brighter regions beyond. Dr. Halley and others have discovered nebulæ in different parts of the heavens. In the *Connoisance des Temps*, for 1783 and 1784, there is given a catalogue of 103 nebulæ observed by Le Messier and M. Mechain. But to Dr. Herschel we are indebted for catalogues of 2000 nebulæ and clusters of stars, which he himself had discovered. Some of them form a round compact system; others are more irregular, of various forms; and some are long and narrow. The appearance of luminous spaces in the heavens, Sir Richard Phillips denies to arise from light *per se;* but ascribes the luminosity of all such spaces to the multitude of planets, asteriods, satellites, and cometary bodies, with which those spaces are filled.

New stars sometimes appear, while others disappear. Several stars mentioned by the ancient astronomers, are not now to be found; several are now visible to the naked eye, which are not mentioned in the ancient catalogues; and some stars have suddenly appeared, and again, after a considerable interval, vanished; also a change of place has been observed in some stars.

From an attentive examination of the stars with good telescopes, many which appear only single to the naked eye, are found to consist of numerous stars. α *Herculis*, is a double star, so is π *Bootes;* and Dr. Herschel, by his highly improved telescopes, has found about 700.

From a series of observations on double stars, Dr. Herschel has found that a great many of them have changed their situations with regard to each other; that the one performs a revolution round the other; and that the motion of some is direct, while that of others is retrograde. He has observed that there is a change in more than 50 of the double stars. either in the distance of the two stars, or in the angle made by a line joining them with the direction of their daily motion.

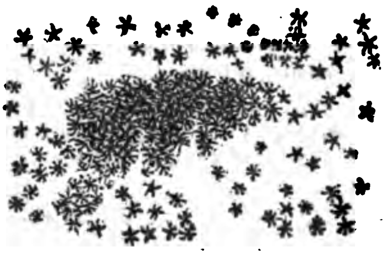
Dr. Herschel has observed that the smaller of the two stars composing Castor, has a revolution of 342¼ years round the other; the double star λ Leonis has a period of 1200 years; ε Bootes, of 1681 years; δ Serpentis, of 375 years; γ Virginis, of 708 years; and so of the rest—but the life of one man is evidently too short to attain correct results, in regard to periods so disproportionate to his narrow space of existence.

These motions of the stars among themselves being apparent to observation, the doctrine of Dr. Herschel and other astronomers is rendered probable, that the Sun has a motion or orbit of its own among the fixed stars of the Milky-Way, at the rate of the Earth's motion, carrying with it all the planets, just as the planets themselves, carry with them their systems of satellites in their own orbits. The rotation of the Sun on its inclined axis, according to the theory of Sir Richard Phillips, seems to indicate the action of a centrifugal force in the Sun, and to render the notion, that the whole solar system is analagous to a primary and its satellites, exceedingly probable

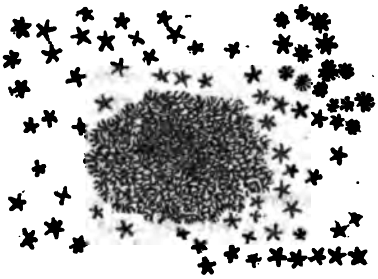
In a paper on the Construction of the Heavens, Dr. Herschel has the following observation:—"That the Milky-Way is a most extensive stratum of stars of various sizes, admits no longer of the least doubt; and that our Sun is actually one of the heavenly bodies belonging to it, is as evident."

In February, 1814, Dr. Herschel, the prince of astronomers, read to the Royal Society, the results of thirty years' observations on nebulæ, with the best telescopes ever possessed by man. He conceives that the stars form independent systems among themselves. He considers our Sun as part of that shoal or system which we call the Milky-Way, and that all the stars of the first, second, and third magnitudes, belong to that vast cluster. The stars, he remarks, are not spread in equal portions over the celestial sphere, but are found in patches, each containing many thousands, and many more than the eye can separate from the mass. These he calls *clusters;* and he conceives they have a constant disposition to unite more closely, by a power which he calls the *clustering power*. He gives an account of eighty of these clusters, some of the drawings of which are copied here.

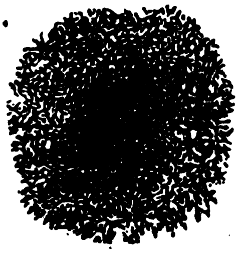
The following figure represents a COMPRESSED CLUSTER OF STARS, the centre part 8′ long, 2′ broad.



The following figure represents another similar CLUSTER OF STARS.



The following figure represents a GLOBULAR CLUSTER 2′ in diameter, as seen with Herschel's 40 feet telescope.



COLD WATER.

"The strength of rum! Give me only the pale water which nature brews down in the bright crystal alembicks of her cloud-crested mountains! Give me, when I would assail, with strained nerves and the arduous outlay of bones and sinews some mount of opposition, reared full and impassable in my path—give me only that pure flow which followed the stroke of the prophet's rod—give me that gush, cool and clear, that bubbled up before Hagar and fainting Ishmael—give me only that fluid which trickles down the bright sides of our own American mountains—gathers into rills in the wood uplands—then rolls into broad, beautiful, transparent rivers—spreads into lakes, the looking-glasses to reflect all that is dark, or soft, or bright, or deep, in the unfathomed firmament above—give me these crystal streams, these cool, fever-allaying waves, in health or sickness, when the thirst of the last fatal fever shall assail my vitals—give me these waters, untortured and free, until that moment when I shall drink the waters of eternal life."

The Japanese build upon one floor, and their rooms are parted by their folding-screens, so that they can enlarge or contract them at pleasure.

Ancient Chinese bridges, of great magnitude, are built with stone arches, exactly like those which have been considered as a Roman invention.

POETRY.

ART.—CHARLES SPRAGUE.

When from the sacred garden driven,
  Man fled before his Maker's wrath,
An angel left her place in heaven,
  And cross'd the wanderer's sunless path.
'Twas Art! sweet Art! new radiance broke,
  Where her light foot flew o'er the ground:
And thus with seraph voice she spoke,
  "The curse a blessing shall be found."

She led him through the trackless wild,
  Where noontide sunbeams never blazed:—
The thistle shrunk—the harvest smiles,
  And nature gladdened as she gazed.
Earth's thousand tribes of living things,
  At Art's command to him are given,
The village grows, the city springs,
  And point their spires of faith to heaven.

He rends the oak,—and bids it ride
  To guard the shores its beauty graced;
He smites the rock—upheaved in pride,
  See towers of strength, and domes of taste.
Earth's teaming caves their wealth reveal,
  Fire bears his banner on the wave,
He bids the mortal poison heal,
  And leads triumphant o'er the grave.

He plucks the pearls that stud the deep,
  Admiring Beauty's lap to fill:
He breaks the stubborn marble's sleep,
  And mocks his own Creator's skill.
With thoughts that swell his glowing soul,
  He bids the ore illume the page,
And proudly scorning time's control,
  Commerces with an unborn age.

In fields of air he writes his name,
  And treads the chamber of the sky,
He reads the stars, and grasps the flame,
  That quivers round the Throne on high.
In war renowned, in peace sublime,
  He moves in greatness and in grace;
His power subduing space and time.
  Links realm to realm, and race to race.

RIO DE JANEIRO AND BRAZIL.

We are indebted to a friend, for a sight at a private letter, dated some months back at Rio de Janeiro, which furnishes us with the subjoined important facts in relation to these two countries. The letter is from a highly respectable American mercantile house at that place.

Business has been extensively embarrassed during the last year in Rio de Janeiro, in consequence of a bad currency, scarcity of labour, bad faith, and ignorance and corruption in the government. By a recent change in the constitution of the country, provincial legislatures have been established, which seem promising to become independent sovereignties, and to legislate so much in contravention of the interests of each other and the whole empire, that nothing but anarchy and perplexity can be expected from them. "There is now," says the letter, "no circulating medium of general currency throughout the empire, which could impart confidence and give activity to business; and we have the prospect of having in each province a local or provincial currency unacknowledged by the laws, deriving confidence only from those of the province which may bring it into existence; not current in the payment of dues and duties to the national government, and hence nearly without value, or subject to great fluctuations. The national revenue, it is believed, will be applied in each province to the furtherance of these views, which, under the present embarrassed circumstances of the treasury, will occasion almost infinite difficulties and troubles."

The importations of flour, grain, wines, and other articles have been far beyond the demands of consumption; and the provinces have produced such an abundance of coffee and sugar, that labour cannot be procured sufficient to harvest them.

"At present, on large estates, the planters, for want of hands, cannot secure under usual circumstances all the coffee the plants produce. We find a diminution of the number of slaves in the cities, to be accounted for only by the demand for the agricultural districts, which will presently have a check, if not a reaction. When labour becomes high in the cities, they in turn call upon the agricultural districts for a supply. On the estates, we are assured, the number of native African slaves diminish by death, at the rate of five to ten per cent. per annum; and that not more than one half their offspring survive the period of childhood."

SLAVE TRADE OF BRAZIL.

The number of slaves imported in Rio de Janeiro in the years—

1820	15,020		
1821	24,134		
1822	27,363		
1823	29,349		
1824	29,503		
1825	26,254		
1826	33,999	admitted into the Lazaretto this year	32,279
1827	29,787	ditto	28,063
1828	43,555	ditto	41,913
1829		ditto	40,015
1830 (for half year)		ditto	29,777

Two thirds only of the slaves imported were considered by the dealers of any value—one third being lost by death after arrival.

Since 1830, when this revolting trade was prohibited by law, the number imported into this neighbourhood by contraband, may have been 7,000 to 8,000 annually.

Imported into Bahia—

1828	8,860
1829	12,808
1830	8,588

EXPORTS OF RIO DE JANEIRO.

In 1834, 16,013 cases, 957 boxes, 13,206 barrels, and 8,939 bags of sugar; 206,427 hides; 89,808,000 pounds of coffee. In 1833 and 1834, 37,873,280 pounds of coffee were sent to the United States, and 54,568,960 pounds to Europe.

POPULATION OF BRAZIL IN 1833, BY RETURNS TO GOVERNMENT FOR THE ELECTION OF MEMBERS FOR THE NATIONAL LEGISLATURE.

Provinces.			
Para		102,500	Free people
Maranham		153,000	
Pianby		56,500	
Cara		179,500	
Rio Grande de Norte		62,000	
Parahiba		123,500	
Pernambuco		299,500	
Alagoas		166,500	
Sergipe		103,500	
Bahia		438,000	
Cuyaba		28,000	
Goyaz - Slaves	23,166	69,500	
*Minas Gorcas	201,333	604,000	
*Rio de Janeiro	196,000	294,000	
*St. Paulo	141,250	282,500	
Rio Grande de Sul	27,533	82,600	
Espirito Santo		38,500	
St. Catharina		47,000	
		3,130,000	Free people
Slaves ^{2} of the whole population		2,086,666	Slaves.
Total		5,216,666	Population.

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* Coffee-producing provinces—of which Rio de Janeiro produces three fifths of the whole export.

PUBLICK DEBT OF BRAZIL IN 1834.

The foreign debt, composed of loans in London and responsibilities there for Portugal, deducting from the latter the sums paid on account of Maria II., Queen of Portugal, is about - - - - -	$26,500,000
Internal debt funded - - -	13,067,644
Ditto, fluctuating, liquidated, about	742,647
Ditto, ditto, unliquidated, about	2,227,941
Bank notes and Treasury bills given for copper coin, called in -	31,191,174
Total - -	$73,729,406

REVENUE OF BRAZIL.

Estimated by the Chamber of Deputies for the financial year, from July, 1833, to August, 1834, general receipts (excluding provincial) made after the reforms in the Constitution	7,984,044
Expenses fixed by law - - -	8,033,529

CIRCULATING MEDIUM OF BRAZIL.

Bank notes in Rio de Janeiro - -	12,141,605
Ditto, in Bahia - - - -	745,830
Ditto, in St. Paulo - - - -	213,896
	$13,101,331
Copper coin and Treasury bills estimated at - - - - -	18,382,352

In reducing the Spanish currency to our own, we have allowed 1360 *mil reis* to a dollar, which we believe is the present valuation.

THE PLEASURES OF ORNITHOLOGY.

Every production of nature, when rightly studied, becomes in after time, an index to that part of nature in connexion with which it is found; and a bird, as being one of the most remarkable of those productions, is more easily suggested to the mind than any other, and more readily brings along with it all the relations of its locality, and all the phenomena of the time when it is observed. On this account, he who knows all the birds of the British Islands, in their connexions and relations, can, whenever he is so minded, live mentally in all the varied scenes of the British Islands, and, therefore, enjoy all the pleasures of them, be his bodily locality where it may be. He may be on the bleak moor where there is not a shrub, in the close lane of the city, where even the sky is barely seen, in the solitude of a prisonhouse, or laid on a bed of sickness, deprived of the use of sight, and with all his senses dull and indifferent to present objects. But still, if his former study has been true to nature, nature will not desert him in the hour of affliction, or even at the moment of dissolution. Even then, the eagle and the ptarmigan shall fetch him to the mountain, and he shall climb, with bounding heart and sinewed limbs, and the healthful breeze shall play around him, and he shall look down upon a hundred valleys, scan all their inhabitants, and taste their freshness, till the grief of the body become clean forgotten in the enjoyment of the mind. Or, if other scenes please him more, the warbler shall lead to the groves and bowery glades of the forest, and the green leaves shall play in the scented breeze, and the flowers shall blow, and the song of nature shall be sweet and varied, and he shall anew be "the happy boy" even in the extremity of decrepitude. Or the seabird shall conduct him to the cliff, against whose caverned base the waves of ten thousand seas have thundered in vain; and he shall look upon the majesty of the waters; and the ship shall appear, and he shall mentally get on board, girdle the world, and visit every scene and every tribe of men under the sun.

All this, and much more, may be done by any one who has studied the birds, even of one nook of earth, so in their connexion that they may be (which they never fail to be when rightly studied,) an artificial memory; and in proportion as this species of knowledge extends to the tribes of other lands, the enjoyment—the real and substantial value—for, there is no value but in enjoyment, extends and multiplies in a progression far more rapid than even the knowledge; so that he who has studied the whole in their connexions, may, literally and without any figure, be said to have won the whole world for his heritage. And it is a heritage secured under the charter of the Almighty, of which the possession cannot be taken away by all the power and all the arts of man; neither can the possessor himself squander it, as external possessions are often squandered. In life we are constantly hearing of cases in which those, who but a few years before had wealth sufficient for enriching a parish, sink down to the level of mendicants in the streets.

But no man who has once acquired knowledge can despoil himself of that. The mental perception is as immortal as the mind itself; and the attempt to extinguish the one, were as vain as that to annihilate the other.

Robert Mundie's Natural History of Birds.

SAND STORMS OF THE DESERT.

The great *Sahara Region* of Africa is a vast desert of sand, which is composed of particles of white and gray quartz, very small, and seldom attaining so large a size as to form gravel or pebbles. It is by far the dreariest region on the face of the whole globe, and the wind frequently raises this sand in clouds so dense as to overpower a whole company of travellers. "The sand storm we had the misfortune to encounter," says Denham, "in crossing the desert, gave us a pretty correct idea of its dreadful effects. The wind raised the fine sand with which the desert was covered, so as to fill the atmosphere, and render the immense space before us impenetrable but for a few yards. The sun and clouds were entirely obscured, and a suffocating and oppressive weight accompanied the flakes and masses of sand, which I had almost said we had to penetrate at every step. At times we almost entirely lost sight of the camels though only a few yards before us. The horses hung their tongues out of their mouths, and refused to face the clouds of sand. A parching thirst oppressed us, which nothing alleviated."

When whirlwinds visit this immense desert, the sand is raised into pillars, a vivid description of which has been left us by the traveller, Bruce. "At one o'clock," says he, "we alighted among some acacia trees at Wady el Halboub, having gone twenty-one miles. We were here at once surprised and terrified by a sight surely one of the most magnificent in the world. In the vast expanse of desert, from west to northwest of us, we saw a number of prodigious pillars of sand at different distances, at times moving with great velocity, at others stalking on with majestick slowness. At intervals we thought they were coming in a very few minutes to overwhelm us, and small quantities of sand did actually more than once meet us; again they would retreat so as to be almost out of sight, their tops reaching the very clouds; then the tops often separated from the bodies, and these, once disjoined, dispersed in air, and did not meet more; sometimes they were broken in the middle as if they were struck with a large cannon-shot. At noon they began to advance with considerable swiftness upon us, the wind being very strong at north. Eleven ranged along side us, at about the distance of three miles; the greatest diameter of the larger appeared to me at that distance as if it would measure ten feet. They retired from us with a wind southeast, leaving an impression on my mind to which I can give no name, though surely one ingredient was fear, with a considerable deal of wonder and astonishment. It was in vain to think of flying; the swiftest horses would be of no use to carry us out of this danger, and the full conviction of this riveted me to the spot." Adanson, in crossing the river Gambia from the Great Desert, observed one of these pillars of sand crossing that river. "It passed within eighteen or twenty fathoms of the stern of the vessel, and seemed to measure ten or twelve feet in circumference, and about two hundred and fifty feet in height. Its heat was sensibly felt at the distance of a hundred feet, and it left a strong sulphurous smell behind it."

STATISTICKS OF PRISONS.

"In Sing-Sing prison, only 289 out of 842 could read and write tolerably, and but 42 had received a good English education; 485 had been habitual drunkards, and many had committed their crimes while intoxicated. Of 670 prisoners at Auburn, three only had received a collegiate education, and 204 a good English education; 503 had been intemperate, and 400 were committed for crimes perpetrated while under the influence of spirituous liquors. In the Connecticut prison 8 in 100 only could read, write, and cipher, when convicted, and 46 in 100 could read and write. Forty-four in 100 committed their crimes under the influence of alcohol.

Instruction, temperance, and industry are found to be the surest preventives of crime.

POLAR SCENES.

Have any of my friends ever travelled three hundred miles in the depth of winter, without inwardly rejoicing the moment they passed the one hundred and fiftieth milestone—or, have they ever made a voyage from Bristol to Cork without marking, if they are not too miserably seasick, the progress of the packet as she passed Lundy Island? I, myself, once made a trip to China; and I well remember how impatiently anxious we were to turn, as it were, each cornerstone in our voyage. There was, to begin with, the Land's End—then Madeira—the Equador and St. Helena—then the stormy Cape—the squally isle of Madagascar—the Straits of Sunda, and finally the Bouge of Tigris, all were duly and joyfully noted as so many chapters finished in the journal of our voyage. But what had the polar adventurers to cheer them through their dark and dreary winter? Had we the power of locomotion? Assuredly not; for our ships were as firmly locked in the ice as if they had grown there; and the novelty of changing the scene, even from the Atlantick to the Pacifick, with which we should have been quite content, was effectually denied us by the impenetrable barrier which nature had thrown in our way. What had we to distinguish the day from night? not the light from heaven, for it was removed to a happier clime; nor the domestick morning cries of the dustman, the milkman, or the baker—we had not, in fact, any vestige of the busy haunts of man to indicate a living world—all was hushed in the long uninterrupted stillness of a midnight scene, more like the silence of death than the existence of life; and it would seem that we had nothing left but to brood on our recollection of nature in its civilized state; but such was not the case.

It is an essential part of the character of a sailor rather to look forward with hope, than back with despair; and as it is his province to be as anxious today to glide with the current, which to-morrow he may have to stem, so it should be as much an object to turn to advantage the resources of the present, as it is his duty to trim his sails to catch the ever-varying breeze. And thus it was with us—for each succeeding day brought with it some little event which, happily for us, we contrived to make the most of—and these casualties, trifling as they were, served to lighten, in some degree, the prolixity of those moments in which we were not speculating on the progress we should make in the ensuing season towards Icy Cape.

At the period of which I am now writing the moon shed its pale light throughout the day, so like the cold frosty nights of January in England, that we could only distinguish the diurnal part of our existence by the usual meal hours which called us together. And here it may be asked, how could we possibly amuse ourselves throughout the day? In the first place, we had an excellent library, which comprised eighteen hundred volumes of the most esteemed authors; then, again, each had formed for himself some pursuit which perhaps his natural instinct, more than the intervention of acquirements, led him to adopt. One, for instance, set about building a miniature of the Fury, which he already imagined in an ornamental glass case in a conspicuous part of his father's mansion; another taught himself, or tried to teach himself, the violin—and well we knew it; a third went through a course of mathematicks, the most useful of the whole; a fourth was eternally mending his old clothes—he should have been a tailor; a fifth excelled every one else in skinning birds, and thought of nothing but the museum he would have to show his admiring friends when he took a small half-pay box in the outskirts of London—somewhere about the Old Kent Road—Lee, or Lewisham; a sixth kept a private journal, like myself, intended to show off in the periodicals, as I am anxious to do; a seventh—and he was an odd fellow—shut himself in his nest of a cabin, five feet by three in length and breadth—with thermometer at ninety, from which he emerged, with a sickly jaundiced hue, only to devour a portion of food worthy a more active calling; but he was an exquisite draughtsman, a good surveyor, and a capital water-drinker. Poor fellow! he was sanguine about his promotion—never got it, and I am told he died of a broken heart. Then we had an occasional siesta after dinner—a casual bear hunt—an evening school for the instruction of those of the crew who could neither read nor write—sociable concerts twice a week in Sir Edward Parry's cabin, and an extra glass of grog every Saturday night to sweethearts and wives.

About this period, notice was given that a grand Venetian carnival or masquerade would be held on board the Fury, to commence at six in the evening, and sanctioned by authority. It was also stated in the programme, that all the musical talent in the country was engaged for the occasion, and every attention would be paid on the part of the stewards to promote the conviviality of the evening—no one to be admitted except in character or domino—and no bad characters eligible. This notice was posted up in the most conspicuous part of the ship, with a lively sketch appended to it, of a blind fiddler *a la* Cruikshank, led by a tottering old woman, with the sorry remnant of a soldier's coat on her back, a round hat—no mean resemblance of Liston as Moll Flaggon, but infinitely less portly and swaggering, for in this sketch the feebleness of old age and meekness of poverty were apparent in the curved form and lank visage of the fiddler's wife.

Novelty has more or less its charms everywhere and for every one—from London to its antipodes and back again. On the present occasion, its influence in facilitating our ways and means was singularly successful. Masks and caps made of paper, wigs made of oakum, false hips and bustles, false fronts and false calves, bonnets, shawls, gowns, and petticoats, were eagerly sought after, and as ingeniously contrived. In fact the lower deck every evening presented a more than usual scene of busy animation—patching, darning, and transforming old clothes; making liveries out of red and green baize, lawyers' gowns of black bunting, and ladies' stays of good stiff number-one canvass—paste, putty, vermilion, and ivory-black, with features of mystery and cunning, some working dexterously with smiles of self-satisfaction, others perplexed and embarrassed in their schemes, and all equally anxious to disguise as much as possible the dress in which they hoped to disguise themselves.

A masquerade in the polar regions! Who ever heard of such a thing? It was as little thought of when we left England, as our attending the carnivals of Venice during our absence; and had the idea then occurred to us, we should have thought the first as improbable, as we knew the second to be impossible. In amateur plays the difficulty of disguising one's self, and the still greater difficulty of casting the characters, may have suggested this kind of amusement; but I should have deemed it impossible to evade the lynx-eyed scrutiny of my companions, when the few places of concealment which a ship affords is considered. With respect to habiliments, those who found it difficult to contrive a dress suitable to the character they wished to appear in, naturally regretted they had not had a hint of the affair before we left England; and those who complained most were on the female side of the question; and this was also natural, as the difficulty, to do justice to the bust, seemed at first insurmountable. This perplexing affair, however, like many others, was conquered with sailor-like ingenuity.

I believe, that when a case of necessity is made known on board a man-of-war, and particularly upon an occasion of this kind, which is yet more singular, there are few things which may not be procured without stirring one foot from the vessel, however ridiculous their being in possession of a sailor may appear; and it was laughable enough to find our wants relieved as they became publick—that is, indirectly—through the medium of one, two, and often three agents, to escape detection. When, for instance, the plays were first introduced on a former voyage, an amateur wanted a pair of spurs to complete his costume. Who could have imagined that such an article would have found a resting-place in one of the discovery ships! The armourer set to work, when, to the astonishment of every one, an old sailor, who had never trusted himself on the back of a horse in his life, produced a pair from the bottom of his chest, wrapped in a piece of flannel, as highly polished as if they had done duty at the Horse Guards the week before. Upon the present occasion, a mask, a domino, a lady's fan, and some other things of an equally novel nature, were found by one of the officers, which, we concluded, must have been dropped into his trunk by his fair fille-de-chambre, when she packed it for him. Will you lend me this, or that? Have you such a thing in your possession as an old pattern to a petticoat or a gown? Can you inform me where I can get a bunch of false ringlets, or how I shall manage without a chemise, or an under garment of some kind to conceal an old pair of trousers which are covered with tar? These were the constant questions of emissaries in every quarter; and the week preceding the masquerade appeared the shortest in our calendar since we left England.

At last the eventful evening arrived, and no schoolboys ever broke loose from the trammels of their pedagogue with more searching anticipation of Christmas enjoyments, than did our seamen. The arrangements on board the Fury were too good to pass unnoticed, every thing was so well adapted for the purpose for which it was designed. A rough sign over a raised platform, at the extreme end of the central part of the forecastle, exhibited the jolly sailor just landed from his voyage of discovery, with a well-filled purse in one hand, and a long pipe in the other. He had his blooming wife under his arm, and the Hecla and Fury were visible in the background. It is almost needless to add, that the jolly-faced landlady of the jolly sailor did ample justice to the good humour which rallied around her. At the farther end of the quarterdeck, another rude sign announced that the Swiss giantess, lately exhibited at most of the courts of Europe, patronised by his

Royal Highness the Duke of Clarence, and never before seen in the polar regions, to which she had been imported at very considerable risk and expense, might be viewed by the publick for the trifling sum of one shilling; children admitted for half price, and an excellent band in attendance. Walk up, ladies and gentlemen, walk up and see the wonderful Swiss giantess! A ludicrous group of Greenwich and Chelsea pensioners, enjoying themselves over some of Barclay, Perkins and Co.'s entire, was naturally caricatured by one of our officers, in a transparency opposite the jolly sailor, and in the centre of the room. The orchestra was fitted up, in which the performers were instrumental in enlivening the scene. A reception room was prepared on the lower deck for rheumatick or frostbitten amateurs, or fashionable dandizettes, whose curtailed garments were not proof against the harsh clime of the polar regions.

The characters began to assemble at six o'clock, and the busy scene of merrymaking was soon at its meridian. The first who appeared was an elderly gentleman, whose dress, although somewhat the worse for wear, bespoke respectability, and whose peruke announced him a strict observer of old times. He regretted the indisposition of one of his carriage horses, owing to the badness of the roads, and deplored the uncivilized state of the country, not affording the common convenience of a sedan chair, or even a jarvey. This character was admirable throughout, and not recognised until the close of the evening, to be Sir Edward Parry's steward. A lady of distinction in an evening ball dress of light-blue silk, with flounces of cut paper to imitate Brussels point, was followed by her servant, a native of Africa, in livery—green baize, turned up with silver—the embroidered part a little tarnished—were by Captain Hoppner and Mr. Crozier. A strolling fiddler, whose admirably constructed crutch well supplied the loss of his left leg, which he had left on the plain of Waterloo, and whose military attire presented a sorry remnant of the uniform of the regiment he had served in—solicited alms for the support of nine starving children—and his wife received the charity of the benevolent in an old hat—exceedingly well supported by Sir Edward Parry and Mr. Halse. The next group which appeared excited marked attention, and many were the efforts made to discover who they were; but they were secure in the success of their impenetrable disguise. It consisted of a hawking umbrella-mender, with his wife and daughter, as itinerant ballad-singers—the latter, so sensitively tenacious of her charms, that she constantly appealed to her mother, under whose cloak she endeavoured to hide herself, to protect her delicate frame from the rude overtures of the men. The produce of a small basket of tape, thread, and needles, helped to support this indigent family; and the style of their dialogue was in perfect keeping with their appearance. I never saw a better group than this—and I have paid an exorbitant sum for seeing many worse. There was a good deal of low wit and good humour in their individual parts, which was well supported by Lieutenant Sherer and two of the Hecla's seamen. A miserably clad old soldier, whose exertions in keeping a pathway across the street clean, for the convenience of the publick, which, by the by, he had previously strewed dirt over, to their no small annoyance, that he might have something to sweep—went off with *eclat*, by Lieutenant Ross. And a wandering Jew, whose promissory notes were issued with characteristick caution by a seaman of the Fury. A dialogue between a Scottish laird and a southern middleman, on the value of land, the breed of black cattle, and the average market-prices, was inimitably kept up by two of our sailors. There was a clown, whose buffoonery in descanting on the wonderful merits of the Swiss giantess was worthy a disciple of Grimaldi himself. He was quick at a repartee, and yet acknowledged himself as great a fool as any of the company. We had also a country practitioner in medicine, who was excellent; and a widow of one of the seamen of the last expedition, who made many appeals in a pathetick tone in behalf of her infant, which she carried in her arms—urging its weak state, for it was not yet weaned—"Rest thee, babe," in a shrill squeaking voice, with a strong nasal twang, quieted the sleeping innocent. Watchmen, riotous sailors with more money than wit, chimney-sweepers, young ladies upon the debateable principle, and a recruiting party, filled up the amusements of the evening, with a number of songs in character. Each man had three tickets, which entitled him to three glasses of rum or brandy punch; and the jolly sailor before alluded to, was the rallying point throughout the evening, and so well attended, that the landlord and his wife, who, by the by, were capital in their station, had no sinecure. Precisely at ten o'clock the company retired—the sailors well pleased with their evening's frolick, and the officers to discuss the merits of a good supper, and the various characters who had exhibited on the occasion.

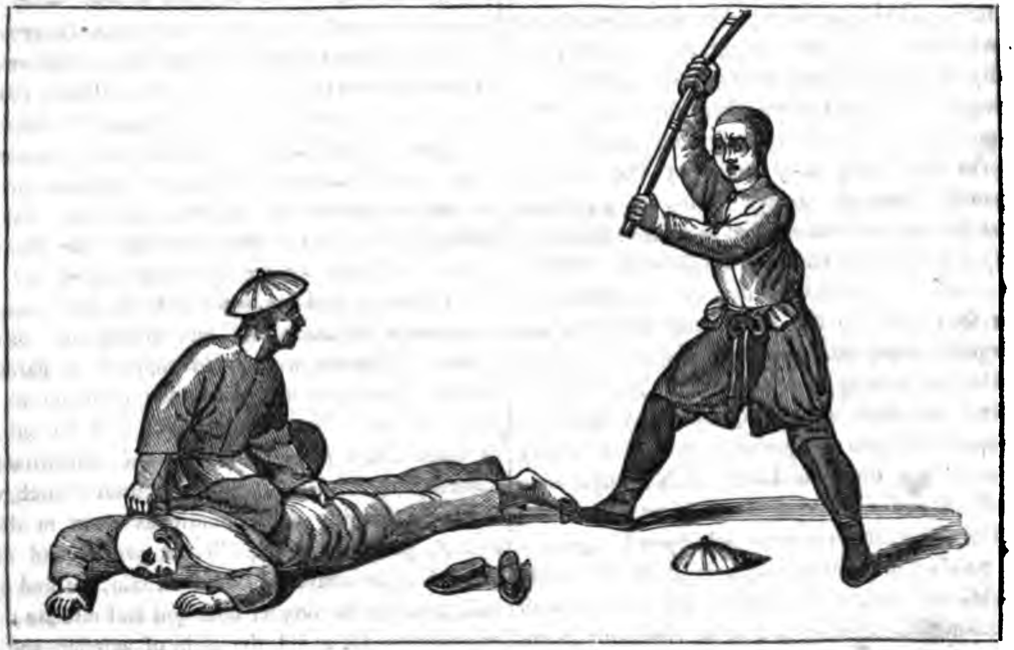
There was not throughout the festive scene a single instance of inebriation on the part of the seamen. The rooms, as I have elsewhere stated, were tastefully fitted up, and of the hundred who were present, it would have been difficult to find one who had not banished all care from his mind that night. The difference of the temperature between the lower and upper deck was seventy degrees.

A few nights after the masquerade we had a magnificent bear-hunt, amidst scenery which, although sterile and familiar to us, was sufficiently sublime to awaken a strong feeling of admiration in our minds. In our solitary position, when, after the crew had retired to rest, the stillness of death prevailed, any—even the least discernible object that approached the ships—stealthily, as they usually did, was sufficient to cause a kind of momentary thrilling sensation, which can only be accounted for by the extreme loneliness of the scene, and the calm, quiet silence of the night. On the present occasion, when every thing about the ship was hushed in repose, a large bear was discovered by the solitary officer of the watch, within a few yards of the gangway. Cautiously descending the ladder, lest the slightest noise might frighten the animal, he aroused a party of the officers and seamen, who were joined by an equal number from the Hecla. The dogs were put on the slip, and in a few minutes the whole party sallied forward. The night was rather fine than otherwise. but the sudden gusts of wind from the deep ravines on either side almost indicated the approach of a snow storm. The moon was near her meridian, and the light, which she shed on the surrounding objects afforded those who had hurried on deck a transien view of the animated scene; but the men and dogs were soon lost to our view. We listened watchfully and in silence to the distant shouts, as they yielded gradually to the hollow dismal sound of the mountain blast, until they were altogether lost in the distance; and the sudden violent gusts which broke mournfully on our ears made us apprehensive for the safety of our comrades.

The bear took a southerly course, and finding himself nearly surrounded by his pursuers, who had systematically formed themselves into a semicircle, made a bold effort to ascend the steep face of the mountain up a precipitous cliff, over which the snow had frozen to a considerable depth. It is scarcely possible to conceive how so unwieldy an animal could have accomplished an ascent, which one would have thought might have baffled the light spring of a greyhound; nevertheless he succeeded in gaining an astonishing height; and the most extraordinary part of the affair was, that the dogs rolled repeatedly down the face of the cliff in their ineffectual effort to turn him, whilst he not only held his footing, but continued, although with evident labour, to make his way toward the top. At length one of the dogs, with singular sagacity, finding himself defeated at that part of the cliff, ran along the base of the mountain until he arrived at a part less difficult of ascent, and gliding swiftly along the abutment of a high ledge of rocks which overhung that part of the cliff, he was in a minute above the bear and within a few feet of him. Again the instinct of this fine animal availed him, for had he attempted to descend from the comparatively secure position he had thus gained, he would have been hurled by his powerful enemy to the bottom of the cliff; he there deployed, as it were, along the brink of the precipice, seemingly content in checking the further progress of the bear. Poor bruin, finding himself thus baffled, and being much exhausted from his efforts to gain the dizzy height, stood or rather balanced his unwieldy body with astonishing ease, as if doubtful what course he should next take, and the panting dog lay couched within a few yards of him, guarding the only spot by which he could have made his escape.

The moon, which had hitherto been partially obscured by the misty haze of the night, now shone forth at the moment one of the officers had contrived to climb to the top of some shelving rocks within about eighty yards of the bear. From this position he might have taken tolerable aim, but the faithful Esquimaux dog lay in nearly a direct line, and apparently within a few feet of the bear, and so insecure was his own footing that he doubted whether he could stand even the slight recoil of his rifle. The contending parties were thus placed at bay, and the temporary rest seemed grateful to all. At length the dog changed his position, and the marksman, no longer able to withstand the tempting opportunity, levelled his gun and struck the animal between the shoulders. He made a convulsive spring from his resting-place, and a crash, loud and frightful, announced his destruction, as he tumbled headlong down the precipice, dashing with violence against the projecting buttresses, and burying himself deep in the snow underneath. The pause of death was succeeded by shouts of victory from the hardy adventurers, many of whom, from the little attention they had given to their dress on leaving the ship, were severely frostbitten. The thermometer stood at 30 degrees below zero.

United Service Journal.



CHINESE PUNISHMENT, No. 4.

AN OFFENDER UNDERGOING THE BASTINADO.

He is thrown flat upon his face, and held in that position by one, or more, if necessary, of the magistrate's attendants kneeling upon his back, whilst another applies the pan-tsee to his posteriors

The pan-stee is a thick piece of split bamboo cane, the lower end of which is about four inches in width, and the upper end small and smooth, to render the instrument more convenient for the hand.

Mandarins of power have usually some persons in their train, who attend them with these pan-stees whenever they travel, or go into publick, and who are ready at the nod of their master, to exercise their office in the manner described.

After this ceremony, it is customary for the delinquent to return thanks to the mandarin for the good care he takes of his education.

AGRICULTURE.

The literal signification of the derivatives of Agriculture, is, "*I cultivate the field.*" It is a science which we have reason to believe is of anti-diluvian date; that is, the rudiments of Agriculture were known before the flood, although, indeed, it did not assume the dignity of a regular science, or become a distinct object of pursuit or profession, until many years after that event. The pursuits of Agriculture doubtless form the third step from primitive barbarity towards civilization. Men at first roam the woods and uncultivated fields, depending for their existence upon the spontaneous fruits of the earth or the extremely procarious results of their skill in hunting and fishing. This is the first state. When, however, their fears and wants and the consciousness of their own weakness, lead them for greater certainty and security of life and peace, to associate together, they are prompted to accumulate their forces, to collect the tamest animals in flocks and herds, and to enjoy whatever land they may enter by the right of occupancy: thereby always having a guarantee against the morrow, except that they are exposed to the rapacity of their stronger neighbours. This is the second state, which is that of the shepherds. When they come to the conclusion that they can live happier, enjoy more comforts and greater facilities, they are willing to submit to some self-imposed restraints, to establish a society and create rules for the proper regulation and government thereof. Every man then has the boundaries of his possession marked out and secured to him, against inroad and intrusion. He settles permanently upon his possessions, builds him a house, encloses his flocks within his fields and commences tilling the ground, with the pleasing consciousness that his *children* and not roaming barbarians shall have the benefit of the improvements which his own hard labour is carrying forward. Thus commences the third step, which is Agriculture; after which the arts and sciences are introduced, schools and workshops are established, the laws are elaborated and social discipline and the progress of refinement commences.

The history of Agriculture is thus found intimately blended with the history of men from the earliest ages. The modes, the direction, and the fruits of the art, of course, are different in different climates and countries and with different men of the same country. But its labour is so extensively divided, its products so diversified and abundant, that no man loses the benefit of enjoying the fruits of one branch, by applying himself to another. If one grows cotton and sugar, another raises grain and vegetables; if one grows silk and grapes, another raises hemp and woollens. As Agriculture is in a measure dependant upon the other useful arts, so it is essential to them. What the husbandman produces over and above his own immediate wants, he exchanges with the mechanick for some of the fruits of *his* labour and invention. He finds also, that all classes of the community must subsist upon the fruits of the earth, and the wages of their labour must pay for it; he is therefore stimulated to redouble the amount of his Agricultural products, for which he is to gain not only a competent support for himself and family, but an accumulating treasure, which supplies him with luxuries if needed, or at any rate furnishes a security for the independence of his children. When the husbandman is thus excited, and the earth under his care is made to teem with luxuriant abundance, every ramification in society imbibes a wholesome stimulus, and the whole system prospers and improves.

General Agriculture is doubtless in a higher state of excellence as a science, in Great Britain than in any other country, excepting perhaps Germany, on the globe. The fertile soil and sunny climate of Italy, should indeed, one would suppose, present but an extended and luxuriant garden. But the indulgences if its inhabitants take the place of severer toil, and we procure from their shores only a few oranges and figs, some little silk and laces, and a quantity of maccaroni and vermacelli. Spain, whose Andalusia we should suppose, a paradise, abounding to be sure in pomegranates and olives, fine wool and excellent grasses, that may be cut two or three times a year, also has the misfortune to abound with indolence. The mercurial French, who waste in frivolity what Americans exert in thrifty labour, produce principally but wines and silks. But when we arrive at Great Britain, we find men endeavouring to conquer both soil and climate; and bringing to their aid the light of science and the Briarean arms of the arts; emulous to excel not only in dressing the soil and raising every kind of indigenous Agricultural produce, but in teaching that soil to accommodate and nourish exoticks brought from the torrid and the frigid zone; in improving and increasing the variety and number of their animals, which may be found at home or abroad; in making every kind of experiments, and in endeavouring to reduce the whole of this noble science to fixed and philosophical principles.

In this country, however, many generations passed away without having or contemplating any plan or method of improvement in the Agricultural art. Indeed, our forefathers and their children up to the close of the revolution, were sufficiently occupied in matters which more nearly concerned their lives and liberties. In this might be found a sufficient apology, if needed, for the neglect of Agriculture as well as all the other arts and sciences in this country prior to 1800. By that period many of our intelligent citizens had travelled much, and carefully observed those beneficial improvements in other countries which might be practicably introduced into this. An Agricultural Society was formed in Massachusetts, and its great objects were pursued with newly awakened zeal, industry and research. Merino sheep were imported from Spain; the best breeds of cattle from Great Britain; rare seeds and plants obtained wherever they were available; useful inventions and discoveries were sought out, and the season of actual experiment and practical improvement commenced. The spirit of emulation which had been aroused in New England, extended itself into the other states, and the husbandman everywhere took up the task of improvement with the cheering consciousness that the mechanick, the tradesman, and the man of letters, were observing his honourable toil with admiring eyes and applauding hearts. And why should not the farmer feel proud of his employment? Are not our citizens dependant upon him for the food that nourishes and the raiment that covers them? Is not the strongest resource of the country found in the capacities and products of his art? Who knows also but that in the day of need, every intelligent farmer, whom the necessities of the country should draw from his plough, would prove a Cincinnatus in the field of battle? Who will mistrust him, therefore, in adversity? Who *dare* scorn him in prosperity?

We rejoice that his art is justly appreciated by the sensible portion of the community, and that his honourable toil is encouraged even in the uncertainty of experiment. The scene which a strictly Agricultural town now presents in this country, is worthy the best days of the bard of Mantua. The quantity of land under actual cultivation, will soon be unequalled by any country under one government on the globe.

We have deemed the preceding remarks necessary as an introduction to the subject, and now give place with much pleasure, to the following communication. It is from the pen of a practical farmer, who formerly cultivated one of the best farms in Massachusetts, and will be found to contain important facts in reference to potatoes, which he has discovered by a series of experiments, made at a considerable expense and trouble. The gentleman resides in Berkshire county, Mass., a county chiefly distinguished as a grazing and manufacturing county. It produces excellent cattle, butter and cheese, fine wool, good iron, and the best marble. Its manufactories produce a large quantity of cotton and woollen goods, chiefly for the New York market. An excellent Agricultural Society is established there, and we are inclined to believe it is the first that was established in the country. It is in a prosperous condition, and has a very beneficial influence upon Agriculture in the country.

POTATOES.

Mr. Editor:—As I consider the potato crop more useful and productive than any we can grow in Berkshire, I have deemed it not amiss to mention some few experiments I have made, together with the results, and the mode I have settled upon in growing them.

In my first experiment, I ploughed one acre of cornstalk ground, dragged it smooth, and furrowed it with spaces of three feet. I filled these furrows with rotten manure; then selected my largest and best potatoes, and dropped them on the top of the manure about ten inches apart—taking forty-five bushels—covered them and hoed them three times. Having a most wonderful growth of stalks in due season, my expectations were considerably aroused in relation to the crop. But in harvesting, I found the ground filled with small potatoes of the size of hickory nuts, and the quantity less than I planted of equal size. This great disappointment led me to investigate the cause. It could not be found in an unpropitious season, nor a bad soil. I finally satisfied myself that the fault was in the method of planting, and concluded that one of the causes was over-seeding; another, that the growth of the stolens was too rapid and luxuriant, like a hotbed plant. This led me to believe that manuring in the hill was objectionable.

The next year I ploughed three acres of cornstalk ground after putting on twenty-five loads of unfermented manure upon the first acre, and harrowed it smooth. I then marked off rows at three feet apart, by drawing chains across the field as a guide, and dropped at two and a half feet apart—single potatoes for the hill whether large or small—hoed three times, with but little hilling, in order to keep the potatoes near the surface. From this acre I harvested four hundred and sixty-five bushels, all of fine size. The kind was called the Burr potato. Upon the next acre, I put twelve loads of manure, and managed it the same as the first, except that I planted single potatoes three feet apart, instead of two and a half—hoed as the first. From this acre I harvested two hundred and fifty bushels of good potatoes of the abovementioned species. In the next acre I ploughed and harrowed without manure and furrowed at spaces of three feet, and dropped manure in each hill at intervals of about three feet, taking six loads of manure—hoed three times. From this acre I harvested one hundred and sixty bushels only, and many of the potatoes were very small. On this acre I planted one large potato, or two middle size, or three small ones in each hill. The three acres adjoined each other, and were of equal strength and fertility; soil, loam.

From these experiments, I deduced the following conclusions, which I have successfully practised upon for several years past.

In the cultivation of potatoes the earth should be made rich by spreading manure upon it and mixing it with it. A single potato of the size of a butternut or a hen's egg, that will give but four shoots is better than a large one that will give six, eight or ten. In cultivating corn, all farmers agree that four or five plants in a hill are better than a greater number; so with potatoes, if one shoot will produce five or six potatoes or more, six shoots or stolens will give a greater number than can grow to maturity in the circumference of a single hill. When there are a great quantity of shoots, therefore, there will be a great quantity of miserably small potatoes.

I have practised upon my method three years in succession, and have grown on an average four hundred and fifty bushels of those kinds which are here considered the best for table use. I have never been able to obtain five hundred bushels per acre, but believe I might grow more than that quantity by planting the "Longreds," "Philadelphia blues," or others less nutritious. In addition to the difference in taste, flavour and sweetness, I have no doubt that potatoes differ from fifty to one hundred per cent. in their nutritious properties. Care, therefore, should be taken to procure the best species. Our best in use here, are the "Egg" and "Black," for early crop; next the "Burr," "Pinkeye," and "Foxites." The first two species are very dry and mealy, but to me tasteless; the last three are of great excellence.

The following matter I believe to be practicable, although I have not fully tested it. Let the cook in the family, when she prepares the potatoes for cooking, cut out the germes, or *eyes* of the potato about the size of a filbert, with the point of her knife, string them upon a thread and hang them up to dry. The seed of the potato is thus preserved and many potatoes saved. When the planting season arrives, the potatoes can be planted with as much facility, convenience and regularity as we now plant corn. As it has not yet, however, been fully ascertained whether the drying of the germe will destroy the generating principle it is hoped the experiment will be fully tested.

The preceding facts may be useful to farmers.

PITTSFIELD, May, 1835. J. ALLEN.

AMERICAN LYCEUM.

This sapient body met in this city on the 7th ultimo, and continued in session about four days. These guardians of education and dispensers of useful knowledge, by whose blessings or anathemas all literary and scientifick institutions in the U. S. may be supposed to stand or fall, consisted at this momentous juncture in their history, of the President of Columbia College as chairman, one Prime Secretary, a Corresponding Secretary, and perhaps it would not be deemed exaggeration to add, about *five* or *six* members. At the opening of this national council it seemed quite problematical whether so *large* a number would be collected, the session then consisting of three officers and *one* member. The accession to their numbers was however progressive until they arrived at the complement first stated. The proceedings were grave and dignified; interesting and important, and seemed to bear that impress upon them that is always peculiar to mighty bodies acting in reference to momentous results. The objects of other celebrated assemblages however, which have had an important bearing upon the interests of mankind, history has found susceptible of delineation. But what mortal man shall dare to tell us he has illustrated the great objects of the American Lyceum, and fitted it for the historick page, where it should certainly stand for the enlightenment of posterity? If there are two things which may be presented to the rational mind more difficult than others, they are the quadrature of the circle and the demonstration of the *objects* of the American Lyceum. When the Royal Society discovered the Elephant in the Moon, the phenomenon was satisfactorily accounted for; but when the American Lyceum meets, curiosity may speculate with an unsatisfiable appetite. We assure the reader, we are not exciting his interest for an opportunity to come down upon him with a flashy show of our knowledge in the matter to our own especial glorification; for we are in fact most ignorant of the object for which this great national assembly annually convenes. In our attendance upon its meetings we were reminded of the apparent object of *one of its most sanguine officers*, but in attempting to pry into the general aim of the collected association, we were always driven back into such paroxysms of vexatious disappointment, that we were constrained to pronounce it, a headless, trunkless, toothless body; *sans* purpose, *sans* money, *sans sense*, "*sans* every thing."

We happen to know a little of the history of the American Lyceum; and as it presumes to arrogate to itself the regency of American literature and education, and claims to be the focus of oracular wisdom subject to whose order, recommendation or approval, all measures in any manner relating to the improvement of the mind should be considered, we shall presume to expose its false pretensions and the empiricism which was engrafted upon its very foundation.

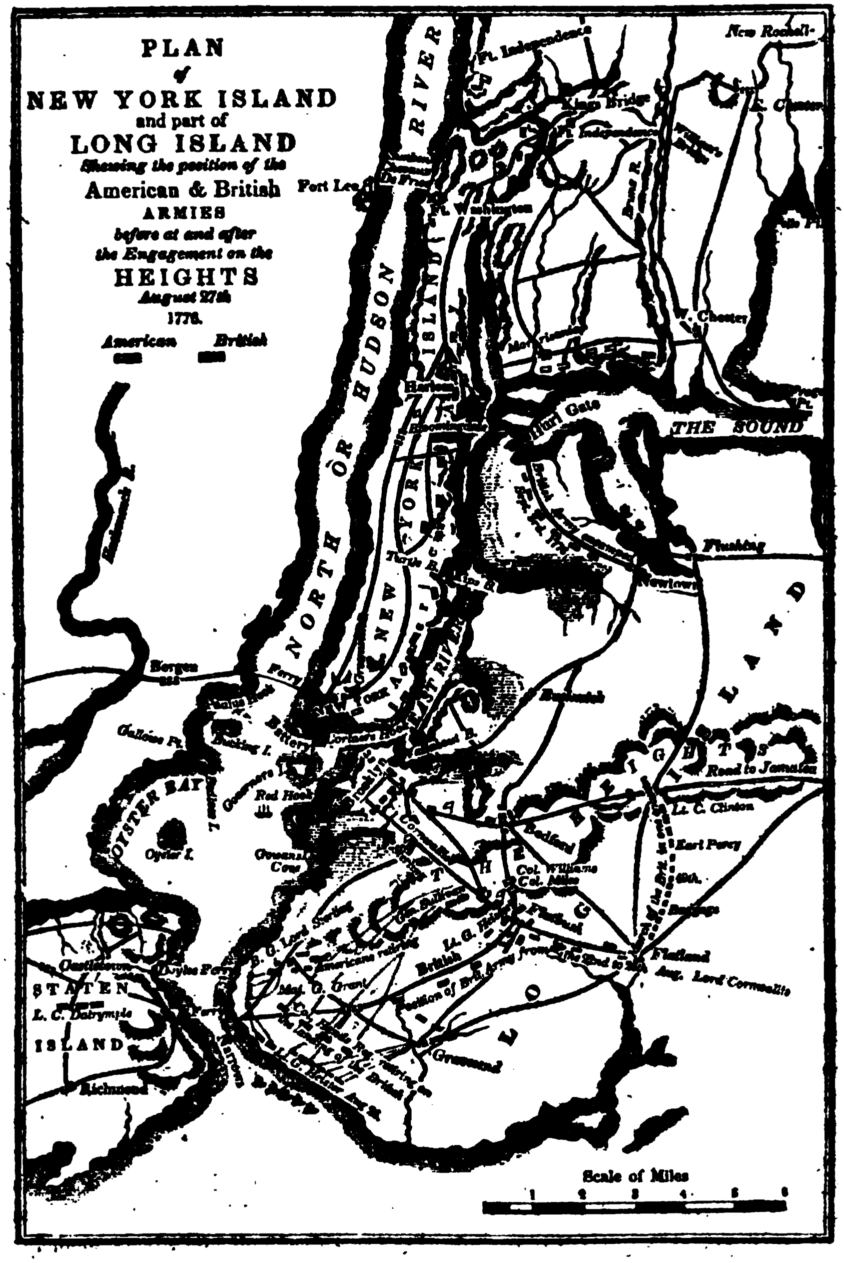
Mr. H. of Boston, most decidedly a great literary quack, invented some machines or instruments, called a school apparatus, that might facilitate as he very naturally thought the method of instruction in common schools and other places. To a circular or publick explanation of his apparatus, he very soon appended a series of recommendations from school teachers and sundry editors of Boston, which were doubtless paid for in rattle-traps. After remaining in Boston with his laurels fresh upon him, as long as his education machines were marketable, he then started on a tour into the interiour. We soon hear of him in the country villages of New England, advocating with apparently ingenuous but astonishing enthusiasm, the establishment of town Lyceums. A very laudable undertaking one would think, and one which might imply in this case a generous sacrifice to science and education. Enlarging with peculiar emphasis and zeal upon the immense benefits, immediate and remote, direct and consequential, that might happily result to towns, counties, and states, from such organizations, he excited an interest in the good village people in favour of his projects, that demanded an immediate establishment on any plan he might propose. In organizing the Lyceum, Mr. H. with a very modest precaution, directed the proceedings with especial reference to the certain disposition of his school apparatus. This apparatus, therefore, was made the most indispensable article in the constitution of the society, and its purchase the first and most essential outlay. As Mr. H. progressed in his philanthropick travels, the multiplication of town lyceums afforded gratifying encouragement to his efforts; the corresponding sale of the school apparatus was flattering to his own opinions of its excellence, and the profits resulting therefrom were abundantly pleasant and particularly convenient.

After New England was pretty thoroughly *Lyceumized* and supplied with the education machine, our adventurer approached New York in prospect of a fine field and a rich harvest. At about this period, a number of teachers and others had convened at Utica, for the purpose of organizing an institution on a plan similar to the excellent Boston Institute of teachers. Tidings of the fact reached the ears of our hero, who proceeded thither immediately. No sooner was that assembly honoured with this man's presence, than the school apparatus walked forth, and its talismanick power directly relieved the members of the convention from all their contemplated labours, and the whole was instantly transmogrified into a State Lyceum. After deliberating, with a gravity excellently assumed, upon the highly important objects which Mr. H. presented to the association in connexion with his labour-saving apparatus, this stalwart knight of the rattle-traps, moved that a mandate issue under the high authority of the great Lyceum of the state of New York, to all teachers and men of learning in the U. S. whom it did in *every* wise concern, to convene upon an appointed day in the course of the ensuing season at the city of New York, for the purpose of forming a great national society to be called the American Lyceum. Accordingly the notices issued and the learned men of the country convened at New York. On the whole the meeting was highly respectable both in point of number, and the talent and reputation of the delegates. By those who knew nothing of the private history of its formation, it was naturally expected that the issue of their deliberations would mark a new era in the history of education in this country. The important bearing and benefit that in times past had been felt throughout the world, from the deliberations of other national societies, as the Institute of Paris, and the Royal Society of London, furnished perhaps the grounds upon which the anticipations of the people were naturally founded. In view of the extreme benefits of such national societies, we wish it to be understood, an association of professors and cadets at West Point had some years previously organized a society, that had the merit of having at least a plan and an object. We refer to the American Associate Society. This society had taken incipient steps to form auxiliary associations throughout the country—indeed it had carried its measures in this respect successfully forward, as it had found ready and efficient coadjutors in several of the colleges, and many auxiliaries in several of the states at the south and west, all of which had opened a regular and mutual correspondence. They had made arrangements for a press establishment; for publishing a monthly journal; for a course of lectures; for exploring missions; and for publishing the general statisticks of literature and education, and the institutions, &c. connected therewith, throughout the United States. And why was not this excellent plan persevered in? Because men love to plume themselves with the imagined honour of inventing a course of their own, rather than adopt the plan of others, although infinitely superiour; and because the attention of the country was absorbed in this great American Humbug, the American Lyceum, and had transferred its support to this prodigious abortion of the mighty intellects of the country. At its first meeting a talented advocate of the American Associate Society, whose only crime was, that he was unfortunately a young man, presented himself before this august body, and in the hope that both societies might be merged into one, to the mutual gratification and benefit of both, and advantageously to the country, modestly but perspicuously explained the history, progress, and objects of the American Associate, and submitted his remarks to their candid and honest consideration. How was his excellent speech received? These foster-fathers of the rising generation, permitted one of their own body, whose wretched education and miserable spirit was only equalled by his unparalleled impudence and ill manners, to browbeat the young gentleman, and to dignify their presence by exulting like a dunghill fowl over the paltry victory he imagined himself to have won. And now that they have succeeded in drawing the publick countenance from that association, let us see what equivalent they have furnished to the country. At any view we can take of its proceedings, never could we exclaim with more literal truth, or more just emphasis:—

> "*Parturiunt montes, et nascitur ridiculus mus.*"

They have met without an object; they have deliberated without a subject; they have laboured without an instrument; reasoned without premises and concluded without a result!

[*To be continued.*]



REVOLUTIONARY BATTLES ILLUSTRATED. No. 1.

OPERATIONS ABOUT NEW YORK, AND ENGAGEMENT ON THE HEIGHTS, AUGUST, 1776.

The plan of military operations which the British ministry adopted early in 1776, as their last effort to subjugate the Americans, was extensive and formidable. It was however more grand in theory than it proved to be in practice. Still it was evident, that they had made an extraordinary effort in hopes of terminating the war at a single blow. New York being the most advantageous position, they had selected it as the centre of their operations. General Howe took possession of Staten Island, on the second of July; and his brother Admiral Howe, with fresh forces from England joined him about the twelfth of the same month. General Clinton arrived there about the same time with the troops he reconducted from the unfortunate expedition of Charleston. Commodore Hotham also appeared there with the reinforcements under his escort; so that in a short time the hostile army amounted to about twenty-four thousand men; English, Hessians, and Waldeckers. Several regiments of Hessian infantry were expected to arrive shortly, when the army would be swelled to the number of thirty-five thousand combatants, of the best troops of Europe, all abundantly supplied with arms and ammunition, and manifesting an extreme ardour for the service of their king. The plan was first to get possession of New York, which was deemed of most essential importance. Then if General Carleton, after having passed, as was hoped, the lakes of Canada, could penetrate to the banks of the Hudson, and descend this river at the same time that General Howe should ascend it, their junction would have the immediate effect of interrupting all communication between the provinces of New England, on the left bank, and those of the middle and south upon the right. While General Howe was seconded in his invasion of New York by the twelve or thirteen thousand men coming from Canada under Governour Carleton, General Clinton was to operate in the provinces of the south, and to attack Charleston. The American troops being thus divided, and their generals surprised, and pressed on so many sides at once, it was not doubted but that the British arms would soon obtain a complete triumph.

But in executing this design they had counted too much on an admirable concurrence of a great number of parts, and had not taken into account the difficulties of the winds and seasons. Admiral Howe did not arrive, until after Clinton's expedition of Charleston had totally miscarried. The army of Canada was entirely interrupted at the lakes. It was still, however, confidently expected that General Howe would be able alone to make a decisive campaign.

To resist this impending storm, Congress had ordained the construction of rafts, gun-boats, galleys and floating batteries for the defence of the port of New York and the mouth of the Hudson. They had also decreed that thirteen thousand of the provincial militia should join the army of Washington, who, being seasonably apprized of the danger of New York, had made a movement into that quarter; they also directed the organization of a corps of ten thousand men, destined to serve as a reserve in the provinces of the centre. "All the weakest posts had been carefully intrenched, and furnished with artillery. A strong detachment occupied Long Island, to prevent the English from landing there, or to repulse them if they should effect a debarkation. But the army of Congress was very far from having all the necessary means to support the burden of so terrible a war. It wanted arms, and it was wasted by diseases. The reiterated instances of the commander-in-chief had drawn into his camp the militia of the neighbouring provinces, and some regular regiments from Maryland, from Pennsylvania, and from New England, which had swelled his army to the number of twenty-seven thousand men; but a fourth of these troops was composed of invalids, and scarcely was another fourth furnished with arms.

The American army, such as it was, occupied the positions most suitable to cover the menaced points. The corps which had been stationed on Long Island, was commanded by Major-general Greene, who, on account of sickness, was afterwards succeeded by General Sullivan. The main body of the army encamped on the island of New York, which, it appeared, was destined to receive the first blows of the English.

Two feeble detachments guarded Governour's Island, and the point of Paulus's Hook. The militia of the province, commanded by the American general Clinton, were posted upon the banks of the sound, where they occupied the two Chesters, East and West, and New Rochelle. For it was to be feared that the enemy, landing in force upon the north shore of the sound, might penetrate to Kingsbridge, and thus entirely lock up all the American troops in the island of New York.

Lord Howe made some overtures of peace upon terms of submission, to the royal clemency, which resulting in nothing, decided the British general to attack Long Island. Accordingly, (says Botta,) on the twenty-second of August, the fleet approached the *Narrows;* all the troops found an easy and secure landing place between the villages of Gravesend and New Utrecht, where they debarked without meeting any resistance on the part of the Americans.

A great part of their army, under the command of General Putnam, encamped at Brooklyn, in a part of the island itself which forms a sort of peninsular. He had strongly fortified the entrance of it with moats and intrenchments; his left wing rested upon the *Wallabout* bay, and his right was covered by a marsh contiguous to *Gowanus's Cove.* Behind him he had Governour's Island, and the arm of the sea which separates Long Island from the island of New York, and which gave him a direct communication with the city, where the other part of the army was stationed under Washington himself. The commander-in-chief perceiving that battle was approaching, continually exhorted his men to keep their ranks, and summon all their courage: he reminded them that in their valour rested the only hope that remained to American liberty; that upon their resistance depended the preservation or the pillage of their property by barbarians; that they were about to combat in defence of their parents, their wives, and their children, from the outrages of a licentious soldiery; that the eyes of America were fixed upon her champions, and expected from their success on this day either safety or total destruction.

The English having effected their landing, marched rapidly forward. The two armies were separated by a chain of hills, covered with woods, called the heights, and which, running from west to east, divide the island into two parts. They are only practicable upon three points; one of which is near the Narrows, the road leading to that of the centre passes the village of *Flatbush,* and the third is approached, far to the right, by the route of another village called *Flatland*. Upon the summit of the hills is found a road which follows the length of the range, and leads from *Bedford* to *Jamaica*, which is intersected by the two roads last described: these ways are all interrupted by precipices, and by excessively difficult and narrow defiles.

The American general wishing to arrest the enemy upon these heights, had carefully furnished them with troops, so that if all had done their duty, the English would not have been able to force the passages without extreme difficulty and danger. The posts were so frequent upon the road from Bedford to Jamaica, that it was easy to transmit, from one of these points to the other, the most prompt intelligence of what passed upon the three routes.

Colonel Miles, with his battalion, was to guard the road of Flatland, and to scour it continually with his scouts, as well as that of Jamaica, in order to reconnoitre the movements of the enemy. Meanwhile the British army pressed forward, its left wing being to the north, and its right to the south; the village of Falmouth was found in its centre. The Hessians, commanded by General Heister, formed the main body; the English, under Major-general Grant, the left; and other corps, conducted by General Clinton, and the two lords, Percy and Cornwallis, composed the right. In this wing the British generals had placed their principal hope of success; they directed it upon Flatland. Their plan was, that while the corps of General Grant, and the Hessians of General Heister, should disquiet the enemy upon the two first defiles, the left wing, taking a circuit, should march through Flatland, and endeavour to seize the point of intersection of this road with that of Jamaica; and then rapidly descending into the plain which extends to the foot of the heights, upon the other side, should fall upon the Americans in flank and rear. The English hoped, that as this post was the most distant from the centre of the army, the advanced guards would be found more feeble there, and perhaps more negligent: finally, they calculated that, in all events, the Americans would not be able to defend it against a force so superiour. This right wing of the English was the most numerous, and entirely composed of select troops.

The evening of the twenty-sixth of August, General Clinton commanding the vanguard, which consisted in light infantry; Lord Percy the centre, where were found the grenadiers, the artillery, and the cavalry; and Cornwallis the rearguard, followed by the baggage, some regiments of infantry and of heavy artillery; all this part of the English army put itself in motion with admirable order and silence, and leaving Flatland, traversed the country called New-Lots. Colonel Miles, who this night performed his service with little exactness, did not perceive the approach of the enemy; so that two hours before day the English were already arrived within half a mile of the road of Jamaica, upon the heights. Then General Clinton halted, and prepared himself for the attack. He had met one of the enemy's patrols and made him prisoner.

General Sullivan, who commanded all the troops in advance of the camp of Brooklyn, had no advice of what passed in this quarter. He neglected to send out fresh scouts; perhaps he supposed the English would direct their principal efforts against his right wing, as being the nearest to them.

General Clinton learning from his prisoners that the road of Jamaica was not guarded, hastened to avail himself of the circumstance, and occupied it by a rapid movement. Without loss of time, he immediately bore to his left towards Bedford, and seized an important defile which the American generals had left unguarded. From this moment the success of the day was decided in favour of the English.

Lord Percy came up with his corps; and the entire column descended by the village of Bedford from the heights into the plain which lay between the hills and the camp of the Americans. During this time General Grant, in order to amuse the enemy and divert his attention from the events which took place upon the route of Flatland, endeavoured to disquiet him upon his right; accordingly, as if he intended to force the defile which led to it, he had put himself in motion about midnight, and had attacked the militia of New York and of Pennsylvania who guarded it. They at first gave ground; but General Parsons being arrived, and having occupied an eminence, he renewed the combat, and maintained his position till brigadier-general Lord Sterling came to his assistance with fifteen hundred men. The action became extremely animated, and fortune favoured neither the one side nor the other. The Hessians, on their part, had attacked the centre at break of day; and the Americans, commanded by General Sullivan in person, valiantly sustained their efforts. At the same time the English ships, after having made several movements, opened a very brisk cannonade against a battery established in the little island of Red Hook, upon the right flank of the Americans, who combated against General Grant.

This also was a diversion, the object of which was to prevent them from attending to what passed in the centre and on the left. The Americans defended themselves, however, with extreme gallantry, ignorant that so much valour was exerted in vain, since victory was already in the hands of the enemy. General Clinton being descended into the plain, fell upon the left flank of the centre, which was engaged with the Hessians. He had previously detached a strong corps in order to intercept the Americans.

As soon as the appearance of the English light infantry apprised them of their danger, they sounded the retreat, and retired in good order towards their camp, bringing off their artillery. But they soon fell in with the party of royal troops which had occupied the ground on their rear, and who now charged them with fury; they were compelled to throw themselves into the neighbouring woods, where they met again with the Hessians, who repulsed them upon the English and thus the Americans were driven several times by the one against the other with great loss.

They continued for some time in this desperate situation, till at length several regiments, animated by a heroick valour, opened their way through the midst of the enemy, and gained the camp of General Putnam; others escaped through the woods. The inequality of the ground, the great number of positions which it offered, and the disorder which prevailed throughout the line, were the cause that for several hours divers partial combats were maintained, in which many of the Americans fell.

Their left wing and centre being discomfited, the English, desirous of a complete victory, made a rapid movement against the rear of the right wing, which, in ignorance of the misfortune which had befallen the other corps, was engaged with General Grant. Finally, having received the intelligence, they retired. But encountering the English, who cut off their retreat, a part of the soldiers took shelter in the woods, others endeavoured to make their way through the marshes of Gowan's Cove; but here many were drowned in the waters, or perished in the mud; a very small number only escaped the hot pursuit of the victors, and reached the camp in safety. The total loss of the Americans, in this battle, was estimated at more than three thousand men in killed, wounded, and prisoners. Among the last were found General Sullivan, and Brigadier-generals Lord, Sterling and Woodhull. Almost the entire regiment of Maryland, consisting of young men of the best families in that province, was cut to pieces. Six pieces of cannon fell into the power of the victors. The loss of the English was very inconsiderable; in killed, wounded, and prisoners, it did not amount to four hundred men.

[*To be continued.*]

For the Family Magazine.

A CASE OF INSANITY.

A lady of this city, in feeble health, some years ago fell from a carriage. She received very slight bodily injury, but the fright produced a sudden and total alienation of mind. She soon became so entirely unmanageable, that her friends were obliged to remove her to the lunatick asylum at Bloomingdale. In a few months, under the treatment of the institution, she had so far recovered from her malady, as to hold intelligent conversation on many subjects, and her friends were allowed to visit her. On one occasion, when her husband visited her, while he was consulting privately with the superintendent as to the manner in which he should leave without her knowledge, she left the room unnoticed, and had untied his horse standing in front of the house and seated herself in the wagon with the reins and whip in hand, when she was discovered by the people of the house. The horse was young and spirited, and she had never reined a horse before. The agonies of the terrified husband, when he saw her apply the lash to the furious animal, may not be easily imagined. She started off at full speed. The husband had called for a horse, and was already mounted in pursuit; and although he followed on at a rapid rate, he soon lost sight of her amid the throng of carriages that crowded the road from Bloomingdale to New York. Breathless with anxiety and fear he reached his home. He rushed into the house, and behold, there sat his wife in the parlour, to his extreme surprise, chatting in high glee with the family on the subject of her recent exploit. "Ah," said she to her husband, "I saw you preparing to follow me, but I *eclipsed* them all." (It was about the time of the famous races of the Eclipse horse with Sir Henry.) She had driven through the gateway into the yard in rear of the house, and after giving the horse in charge of a servant, presented herself before her astonished family, to whom she was relating her adventure when her husband arrived. She did not return to the asylum. Her insanity continued, but it was of the least painful kind. It exhibited itself in extreme sprightliness and wit in conversation. To strangers who had not known her disposition to have been the reverse of gayety, the observation that her spirits were too buoyant for a lady of her age, would suggest itself. With the hope that country air and scenery might be beneficial to her, her husband some years after removed to the state of Vermont with his family. They had resided there about a year when the house took fire and burned down. The terrible affright occasioned by the disaster it was soon found had completely restored her to her right mind! The case is remarkable, in the fact that a cure was effected by the same means which produced the disease, and that too after some six or seven years' alienation of mind. The lady is now a resident of this city, and in perfect health.

B.

COAL TRADE OF PENNSYLVANIA.

The vast increase of this trade, within a few years, renders all authentick details relating to it a subject of general interest; and in the proof of this increase, it is only necessary to state, that in the year 1820, no more than 365 tons of anthracite coal found their way to the market from the Lehigh mines, while in 1834 the quantity sold amounted to 374,222 tons, of which 106,500 were from the Lehigh, 224,242 from the Schuylkill, and 43,700 from the Lackawanna mines; the Schuylkill mines having been opened for the market for the first time in 1825, and the Lackawanna in 1829.

The Lehigh Company employ on the Lehigh Canal and the Delaware 275 boats, and others are employed by individuals. On the Morris Canal, there are 250 boats employed in this trade. The number of vessels laden with coal at Philadelphia and Bristol in 1834, was 469. The amount of Lehigh coal shipped coastwise during the same year was 32,154 tons, of which 14,006 tons were shipped from Newark.

The number and description of vessels cleared from the river Schuylkill, laden with coal, during the year 1834, were as follows: 72 brigs, 1123 schooners, and 420 sloops. The amount of the tonnage of the boats employed in the transportation of coal from the Lehigh mines, is 22,150 tons; on the Schuylkill, 24,733.

The value of improvements and property connected with and arising from the anthracite coal trade of Pennsylvania in the three great coal fields, is estimated by a committee of the Legislature of that state as follows, viz.: railroads and canals made by companies and individuals, including part of the state canals, 489 miles, $9,750,937 42: collieries, boats, cars, &c. 1,270,280; capital invested in coal lands, 4,900,000; mining capital, 480,000; value of towns in the coal fields, 3,375,000; making an aggregate of $19,176,217 42: to which may be added the value of storehouses, wharves, landings, &c. in Philadelphia, New York, and other places, together with the value of vessels and capital employed in shipping coal.

The bituminous coal lands in Pennsylvania are supposed by the same committee to comprehend an extent of 21,000 square miles, and the anthracite of 975 square miles. Since the opening of the anthracite coal trade in 1820, its average annual increase has been 33 per cent. The committee believe that it will continue during the next ten years to increase in the same ratio; in which case, the consumption in 1843 will be 10,510,980 tons, the value of which, at $5 per ton, will be $52,544,450. Supposing the increase not to exceed one half of the above estimate, the trade of that year, in the article of coal alone, will amount in value to twenty-six millions of dollars.

Boston Patriot.

CURIOUS PROPERTIES OF THE FIGURE 9.

The following discovery of remarkable properties of the number 9 was accidentally made by Mr. V. Green, more than fifty years since, though, we believe, not generally known.

9 × 1 = 9; 9 + 0 = 9
9 × 2 = 18; 1 + 8 = 9
9 × 3 = 27; 2 + 7 = 9
9 × 4 = 36; 3 + 6 = 9
9 × 5 = 45; 4 + 5 = 9
9 × 6 = 54; 5 + 4 = 9
9 × 7 = 63; 6 + 3 = 9
9 × 8 = 72; 7 + 2 = 9
9 × 9 = 81; 8 + 1 = 9

The component figures of the product, made by the multiplication of every digit into the number 9, when added together make *nine*. The order of these component figures is reversed, after the said number has been multiplied by 5. The component figures of the amount of the multiplier, (viz. 45) when added together make *nine*. The amount of the several products, or multiples of 9, (viz. 405 when divided by nine, gives for a quotient, 45; that is 4+5=9. The amount of the first product, (viz. 9) when added to the other products, whose respective component figures makes 9, is 81; which is the square of *nine*. The said number 81, when added to the abovementioned amount of the several products, or multiples of 9, (viz. 405) makes 486; which, if divided by 9, gives for a quotient 54; that is 5+4=9. It is also observable that the number of changes that may be rung on 9 bells, is 362,880; which figures, added together, make 27; that is 2+7=9. And the quotient of 362,880, divided by 9, is 40,320; that is 4+0+3+2+0=9.

SMALL GRIEVANCES.

We can certainly have no objection to the circulation of our articles by a republication in the various journals and newspapers of the country. But when we originate such articles as are worthy of general circulation, it is desirable to have credit for them. We have seen a half dozen articles stolen from our columns in one edition of a newspaper, and our journal was not even hinted at, although many of the pieces were original with us. We would thank such gentlemen to do us the usual justice in the matter.

NOTICES, REVIEWS, &c.

NORTH AMERICAN READER, By Lyman Cobb.

We have examined this book with gratification, and have found it superiour to any of the kind in use. The selections are in excellent taste, and the arrangement very judicious. Indeed the extracts are so eloquent, interesting and beautiful, that we read the book nearly half through without feeling conscious that we were perusing mere set lessons in reading. In addition to this excellent selection of articles in prose and verse, it contains observations on good reading; the Declaration of Independence; the Constitution of the United States; Political definitions; variable orthography; concise principles of pronunciation; rules for the division of words; and the rules for spelling the plurals of nouns, participles, present tense, and preterit of verbs, and the comparative and superlative degrees of adjectives. It is designed for the use of the highest classes in schools and academies, for which we should think it a very desirable acquisition. Were schools acquainted with this book, the English Reader and American Preceptor, worn out as they are, would deservedly be thrown out of use.

The Knickerbocker Magazine, is one of the best periodicals in the United States. It sustains itself with uniform vigour, interest, talent, and neatness of execution.

Bachelor's Religious Magazine. We have received the 2d number of this comprehensive journal, and find it more than fulfils the promises of the first.

The North American Arithmetick, by Frederick Emerson. 3 parts. Boston. Russel, Ordiorne & Metcalf. From a partial examination of Mr. Emerson's works, we should pronounce them to be more eminently well adapted to the business of schools than any that we have ever seen. We intend giving them that critical review in our next number, which the importance of the subject demands.

POETRY.

THE ORPHAN GIRL.

I have no mother!—for she died
When I was very young;
But her memory still, around my heart,
Like morning mists has hung.

They tell me of an angel form
That watched me while I slept,
And of a soft and gentle hand
That wiped the tears I wept.

And that same hand that held my own
When I began to walk,
And the joy that sparkled in her eyes
When first I tried to talk—

For they say the mother's heart is pleased
When infant charms expand—
I wonder if she thinks of me
In that bright, happy land:

For I know she is in heaven now—
That holy place of rest—
For she was always good to me,
And the good alone are blest.

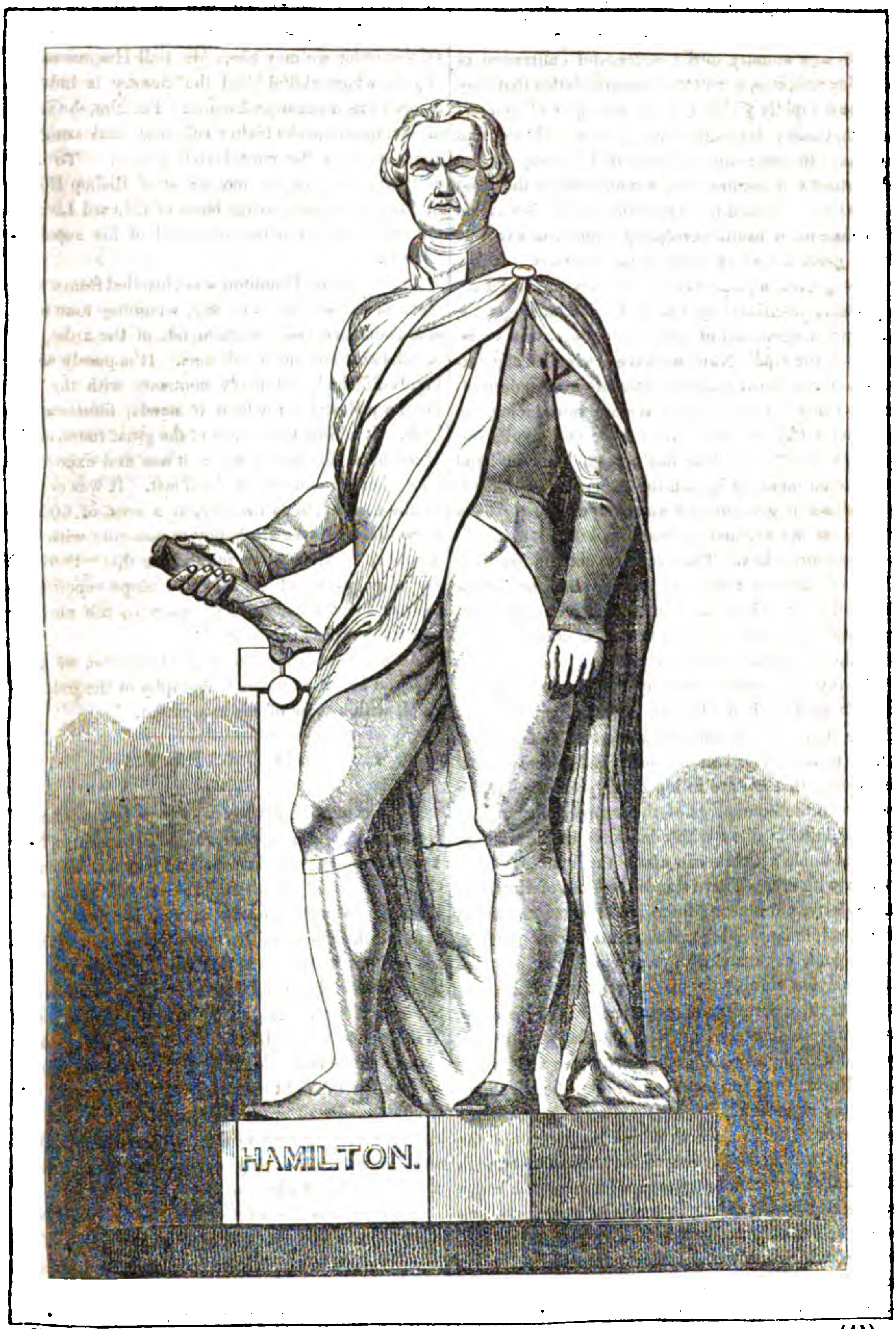
I remember, too, when I was ill,
She kissed my burning brow;
And the tear that fell upon my cheek—
I think I feel it now.

And I have still some little books
She learned me how to spell;
And the chiding, or the kiss she gave,
I still remember well.

And then she used to kneel with me,
And teach me how to pray,
And raise my little hands to heaven,
And tell me what to say.

O mother! mother! in my heart
Thy image still shall be,
And I will hope in heaven at last
That I may meet with thee.

STATUE OF HAMILTON.



STATUE OF GEN. HAMILTON,

MERCHANTS' EXCHANGE, NEW-YORK.

Whatever may hitherto have been the obstacles in this new country to the successful cultivation of the fine arts, it is a matter of congratulation that they are now rapidly yielding to the triumphs of genius; and that every day is developing new evidence that we have the capacity within us of assuming, in any department of the fine arts, a rank equal to the most liberal and polished nations in the world. No nation is before us in useful inventions; none can excel us for a great length of time in the fine arts. A few years ago, and a painter could scarcely procure a respectable livelihood by his profession amongst us, and not a specimen of native sculpture was to be found in the land. Now, we have academies of painters, and the finest productions of their art adorn almost every dwelling; and we are introducing the noblest works of the chisel to grace and dignify our publick buildings. The fine arts go hand in hand with each other, and, with the exception of gardening, which is yet pursued amongst us mostly as a useful art, we are making honourable attainments in all their branches. They require but the fostering hand of affluence and taste, to raise them to a stand beyond the reach of envy or cavil. But at present, we will direct our attention to the beautiful, the noble, the wonderful art of sculpture.

If any specimen of statuary can impress the beholder with exalted ideas of the art of sculpture, it is the statue of Alexander Hamilton. To look upon it, is to see Hamilton himself; and to feel almost conscious that we are in his living presence. When we disburthen ourselves of the impression that it is *he*, the mind is filled with admiration at the triumph of that noble art that can make the marble almost warm with life. There stands the form of Hamilton in majesty, yet repose; there is the broad and noble forehead, the majestick and thoughtful brow, the free, intelligent, commanding eye; you almost perceive the temples throb, you mark every line of feature, and every expression of countenance. The limbs and form are chastely imagined, and the whole is invested with dignity and grace, eloquence and power. The Roman toga hangs gracefully over the left shoulder; the right hand, resting upon an oblong, polished pedestal, holds a scroll, which may represent the act empowering the funding of the national debt, with the seal of government appended; the left arm hangs gracefully by his side. It is almost a speaking statue; beautiful in design, and wonderful in the execution, which has carried the minutest parts to extraordinary perfection. What a powerful conception, strong imagination, discriminating taste, excellent judgment, and skilful hand, must distinguish the artist who can chisel such a "human form divine" out of the rude block of the quarry! To accomplish it, must be the attribute of that high order of genius to which we may apply the adage, *nascitur, non fit*. Of this order we may class Mr. Ball Hughes of this city, to whose skilful hand the country is indebted for this magnificent production. For him, the statue of Hamilton speaks higher and more endearing encomiums than the most lavish praise. To look on this statue, or the monument of Bishop Hobart in Trinity Church, or the busts of Edward Livingston and others, is to be convinced of his superiour talents.

The statue of Hamilton was chiselled from a solid block of white Italian marble, weighing nine tons; was about two years in the hands of the artist, and weighs now one and a half tons. It is purely white, highly finished, and finely contrasts with the blue granite pedestal on which it stands, fourteen feet high. It adorns the centre of the great room in the Merchants' Exchange, where it was first exposed to view about the middle of April last. It was erected by the merchants of the city, at a cost of 6000 to 8000 dollars. We are happy to coincide with Col. Trumbull in this matter, in thinking that "there are very few pieces of statuary in Europe superiour to this, and not twenty-five sculptors in the universe who can surpass this work."

As germane to this notice of the statue, we have annexed below a succinct biography of the great original, with a view of his monument.

BIOGRAPHY.

Alexander Hamilton was born in the island of Nevis, in 1757. He accompanied his mother to New York at the age of sixteen, and entered Columbia College as a student, where he remained three years. He early evinced fine talents, and his juvenile pen asserted the claims of the colonies against respectable writers in the contest with Great Britain. At the age of eighteen he entered the army as an officer of artillery. He soon attracted the notice of Washington, who selected him as an aid with the rank of lieutenant colonel, in 1777. He commanded a battalion of light infantry, throughout the war, which terminated in the capture of Cornwallis. He led the advanced corps of the American troops at his own request, when they carried the British works at the siege of Yorktown, Oct. 14, 1781.

After the capture of Cornwallis, he returned to New York and applied himself to the study of the law. In this profession he soon rose to distinction, and in July, 1792, was chosen a member of Congress. He was chairman of the committee, which reported a resolution to provide a sinking fund to pay the national debt. In 1786 he was chosen a member of the Assembly of New York, and he introduced the bill for acceding to the assumed independence of Vermont. He was appointed, with two others, in 1787, a member of the Federal Convention for New York, and assisted in framing the Constitution of the United States. "It did not, indeed, completely meet his wishes. He was afraid that it did not contain sufficient means of strength, for its own preservation, and that in consequence we should share the fate of many other republicks, and pass through anarchy to despotism. He was in favour of a more permanent Executive and Senate. He wished for a strong government, which would not be shaken by the conflict of different interests through an extensive territory, and which should be adequate to all the forms of national exigency." But he believed it better than the old confederation, and contributed much to its adoption. In 1789, Washington placed him at the head of the Treasury. In his reports he proposed plans for funding the debt of the Union, and for assuming the debts of the respective states, for establishing a bank and mint, and for procuring a revenue. Many of them are very voluminous, and display great powers of mind. Some of them are preserved in the American Museum.

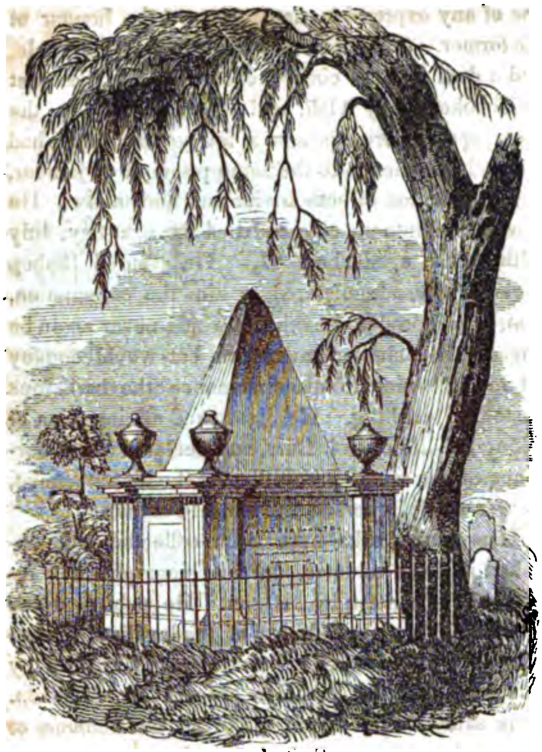
Mr. Hamilton, and Mr. Jefferson, then Secretary of State, were opposed to each other in politicks. The former apprehended danger from the encroachment of the states, and wished to consolidate the general government; the latter entertained little jealousy of the state sovereignties, and was rather desirous of checking and limiting the exercise of the national authorities, particularly the power of the executive. Their disagreement increased till it resulted in such open hostility, and made such confusion in the cabinet, that Washington found it necessary to address a letter to each, recommending forbearance and moderation. No reconciliation could be effected. In his opinion, as to the effect of the revolution in France in 1793 upon our relations with that country, he was opposed by both Washington and Jefferson. By the latter it was deemed not to weaken the obligation of treaties. In 1794 a detachment was sent out under Hamilton's command to suppress the insurrection in Pennsylvania. In 1795 he resigned his office. Soon after this period, circumstances were disclosed which placed his private character in no unequivocal light. When a provisional army was raised in 1798, he was made second in command, Washington being at the head. After the army was discharged in the summer of 1800, he returned again to his profession in the city of New York, where he passed the remainder of his life.

Col. Aaron Burr, Vice President of the United States, in June, 1804, addressed a letter to Hamilton, requiring his acknowledgment or denial of the use of any expression derogatory to the honour of the former. This demand was deemed inadmissible, and a duel was the consequence. The parties met at Hoboken, July 11th, and Hamilton fell, on the same spot where his son a few years before had fallen, in obedience to the same principle of honour, and in violation of both Divine and human law. He was carried into the city, and died the next day, July 12th, 1804, aged about 47. He assured Bishop Moore, who administered to him the communion, that, if restored to health, he would never again be engaged in a similar transaction, but would employ all his influence to discountenance the barbarous custom of duelling. He disavowed all intention of taking the life of Col. Burr, and declared his abhorrence of the whole proceeding. Like his antagonist, he was small in person and short in stature.

Hamilton's works have been collected and published in three volumes, and his biography has recently been written by his son. He published the letters of Phocion in favour of the loyalists, in two pamphlets, 1784. The Federalist was written by him, in conjunction with Mr. Jay and Mr. Madison. It is said that Hamilton wrote all the numbers of that work, excepting 2, 3, 4, 5, and 64, which were written by Mr. Jay; and 10, 14, 17, 18, 19, 21, 37 to 58 inclusive, 62 and 63, which were from the pen of Mr. Madison. In 1793 he wrote papers signed Pacificus, justifying the proclamation of neutrality, and supporting the coalition of the European powers against France. He wrote a letter, endeavouring to prove that John Adams was unworthy a re-election to the presidential chair, and several other political documents, and a defence of himself against the charge of peculation while Secretary of the Treasury.

A monument is erected to his memory in Trinity Church yard, and is sufficiently illustrated by the engraving p. 44. It bears on the north side the following inscription:—

TO THE MEMORY OF
ALEXANDER HAMILTON,
The Corporation of Trinity Church have erected this
MONUMENT,
In testimony of their respect
FOR
The Patriot of incorruptible integrity,
The Soldier of approved valour,
The Statesman of consummate wisdom;
Whose talents and virtues will be admired
BY
Grateful posterity
Long after this marble shall have mouldered into dust.
He died July 12th, 1804, aged 47.



HAMILTON MONUMENT,—Trinity Church Yard.

HISTORY.

GREECE.—1004—752 B. C.

Greece, at the commencement of the present period, was in an unsettled state. By the emigration of many of its inhabitants, colonies had been formed, particularly in Lesser Asia. Afterwards colonies were sent to Italy and Sicily. These, owing to the freedom of their governments, soon rivalled their parent states; a circumstance which induced the latter to put an end to despotism, and to adopt popular constitutions. In this work of reformation, Lycurgus, the legislator of Sparta, was distinguished.

It may be mentioned, in connexion with this subject, and previously to an account of the reformation of Sparta, that the poems of Homer were introduced from Asia into Greece by Lycurgus. He met with them in his travels in that region, carefully preserved them, and brought them home on his return, 886 years B. C. Their effect on the national spirit and literature of the Greeks, was at length highly propitious.

Homer flourished about 900 years B. C. He was a poor blind man, and used to travel from place to place, singing his verses. But his genius was transcendent. All succeeding ages have bowed to it; and his poems have been taken as the model of all epick productions of any note written since his day.

The present form of his poems is supposed not to have been the ancient form. They were probably produced in separate pieces and ballads; and were united into continuous poems, it is said, by certain learned men under the direction of Pisistratus, king of Athens.

The era of Grecian splendour was several centuries after the time of Homer; but by the preservation of his poems, the progress of the Greeks in arts and literature was effectually secured.

Lycurgus, by his peculiar institutions, raised Sparta from a weak and distracted state, to superiority in arms over the other republicks of Greece. Sparta became truly republican in its government, though the form of royalty was retained. Its kings were merely the first citizens in the state, and acknowledged the superiour authority of the Ephori and the people, to whom they were accountable. Their privileges, however, sufficiently distinguished them from the mass of the citizens.

With many things in his institutions that were commendable, there was much that was pernicious. His sole object seems to have been, to render the Spartans fit only for war. The chronological date of the commencement of this reformation, is 884 years B. C.

After the return of the Heraclidæ, Sparta was divided between the two sons of Aristodemus, Eurysthenes and Procles who reigned jointly. The occasion of this was, that Aristodemus having been killed while his children were infants, their mother was unable to tell which of them was the firstborn, since they were twins. The Spartans consequently agreed that they should be joint kings.

This double monarchy continued in the one line under 30 kings, and in the other line under 27 kings, during a period of about 880 years. Polydectes and Lycurgus were the sons of one of these kings. Upon the death of his brother, the crown devolved on Lycurgus; but his sister-in-law being with child, he resigned it.

She however intimated to Lycurgus that if he would marry her, the child should be destroyed immediately upon its birth. Lycurgus, with a view to save it, desired that she would send it to him, and he would dispose of it. Accordingly, the boy, as soon as he was born, was sent to his uncle.

Lycurgus was at supper with a large party when the royal infant arrived, but he instantly took it in his arms, and holding it to the view of the company, exclaimed, “ Spartans! behold your king.” The people were delighted, and the boy was called Charilaus.

Lycurgus, with a view to suppress the calumnies published against him by the faction of the queen, determined upon a voluntary exile. In his travels, he made it an object to acquire knowledge, and especially to ascertain the best means of government. It was during this journey that he discovered the poems of Homer, as abovementioned.

Upon his recall to Sparta, he found things in so bad a condition, that he set about a reformation of the manners of the people. He began his labours by instituting a senate to make laws, and see that they were executed; this senate was composed of 30 members, the kings being of the number.

He next made an equal division of the lands, so that all the Spartans shared it fairly between them. When he endeavoured to do the same with the furniture, clothes, &c., he found the rich very averse to his proposals. He therefore took another course. He substituted iron for gold and silver, as the medium of exchange.

As this iron money was of no account among the neighbouring countries, the Spartans could no longer indulge in luxury, by purchasing foreign costly artidles. The necessary arts of life he allowed to be practised only by slaves.

He then commanded that all persons, even the kings themselves, should eat at publick tables, and that these tables should be served only with plain food. This regulation, more than any other, offended the rich citizens. They rose in a body and assaulted Lycurgus; and one of them, pursuing him to a sanctuary, struck out his eye with a stick.

Lycurgus no otherwise punished this offender, than by making him his page and attendant. In time, these dinners, at which they served up a kind of soup, called black broth, came to be much relished, and very pleasant discourse often enlivened them.

An admirable part of the ceremony at these publick meals was the following. When the company were assembled, the oldest man present, pointing to the door, said, "Not one word spoken here, goes out there." This wise rule produced mutual confidence, and prevented all scandal and misrepresentation.

The children were taught in large publick schools, and were made brave and hardy. All the people were accustomed to speak in short pithy sentences, so that this style of speaking is even now called after them, *laconick;* Laconia being one of the names of Lacedemon.

When Lycurgus had firmly established his new laws, he ensured their observance by the following contrivance. He left Sparta, after having made the people swear, that they would abide by his laws, until he should return. As he intended not to return at all, this was to swear that they would keep his laws forever.

Lycurgus died in a foreign land. By some it is asserted, that he starved himself to death. His laws continued in force 500 years, during which time the Spartans became a powerful and conquering people.

The institutions of this legislator were impaired by many blemishes. The manners of the Lacedemonian women were suffered to be shamefully loose. The youth were taught to subdue the feelings of humanity. The slaves were treated with the greatest barbarity. Even theft was a part of Spartan education.

The object of this was to prepare their minds for the stratagems of war. Detection exposed them to punishment. Plutarch tells us of a boy, who had stolen a fox and hidden it under his coat, and who rather chose to let the animal tear out his bowels, than to discover the theft.

The first of the *Olympiads*, an era by which the events in Grecian history are reckoned, occurred 776 years B. C. The Olympick games were first instituted about 1450 years B. C., but having fallen into disuse, were restored at different times, and from the period above mentioned, form a certain epoch in history.

MACEDON.

Macedon, a kingdom in Greece, and sometimes considered distinct from it in its history, was founded by Caranus, an Argive and descendant of Hercules, about 795 years B. C. The government continued in his line 647 years, i. e. till the death of Alexander Ægus, the posthumous son of Alexander the Great.

The history of Macedon under its first kings is obscure, and presents only some wars with the Illyrians, Thracians, and other neighbouring nations. It became, as we shall hereafter learn, very powerful, and under Philip overturned the liberties of the other states of Greece.

ASSYRIA.

After a chasm of 800 years in the history of the first kingdom of Assyria, we find a few particulars respecting one or two of its last sovereigns. *Pul*, who is mentioned in Scripture, subdued Israel in the reign of Menahem, who became his tributary. This Pul is supposed to be the king of Nineveh, who, with his people, repented at the preaching of Jonah. If this be the fact, he flourished about 800 years B. C.

The object of Jonah's preaching was to denounce the Divine judgments against this people on account of their wickedness. The prophet after great reluctance to obey the command of God, and a signal chastisement for his disobedience, repaired at length to Nineveh, and executed his commission.

The Ninevites took the alarm, and humbled themselves before Jehovah, in consequence of which they were delivered at that time from destruction. The Assyrian empire, of which Nineveh was the capital, ended, however, soon afterwards, as we shall now learn.

Sardanapalus was the last and the most vicious of the Assyrian monarchs. In his reign a conspiracy broke out, by which the kingdom was destroyed, 767 years B. C. Three monarchies rose from its ruins, viz., Nineveh, which preserved the name of *Assyria*, *Babylon*, and the *kingdom of the Medes*.

Sardanapalus was the most effeminate of mankind. He never left his palace, but spent all his time with his women and his eunuchs. He imitated them in dress and painting, and spun with them at the distaff. Being besieged in his city, by Arbaces, governour of the Medes, he at length set fire to his palace, and consumed himself, with his women, eunuchs, and treasures.

CHYMISTRY.

HYDROGEN.

If, into a bottle, containing filings or turnings of iron, or zinc, we pour sulphurick acid, diluted with six or seven times its weight of water, a strong action will take place, and a gas will be given off, which may be collected in the manner described in our article on oxygen, by means of a bent tube, fitted to the mouth of the bottle with a cork. This is hydrogen gas.

It is colourless, and without taste; but, as commonly prepared, has a faint disagreeable smell; which, however, is supposed to depend upon some slight impurity. It is speedily fatal to animal life when taken into the lungs. It is not absorbed by water except in very minute quantities. It is lighter than atmospherick air; and, indeed, the lightest of all bodies which are known to possess weight; 100 cubick inches only weigh 2.1 grains. If a bladder be filled with it, and attached, by means of a stopcock, to a tobacco pipe, upon dipping the bowl into a strong lather of soap, bubbles may be blown with it which will rise rapidly into the air; and it is upon this principle that it is used for filling airballoons. It is inflammable, but it extinguishes flame.

Fill an inverted stoppered bottle with the gas, and close it with a stopper. Fix a small piece of wax-taper upon a wire, and ignite it; turn the bottle up, remove the stopper, and carefully introduce the taper. The gas will immediately inflame at the mouth of the bottle; but the flame of the taper immersed in the gas will be extinguished. Upon withdrawing the taper it may be rekindled as it passes through the flame of the gas, and again extinguished by returning it.

If a mixture of two parts of common air, and one of hydrogen, be made in a strong vial, capable of containing about four ounces of water, it will inflame upon presenting a candle to it, not silently, as in the last experiment, but suddenly, and with a loud explosion. The bottle should be wrapped round with a cloth to prevent accidents, in case it should burst in the experiment.

Oxygen and hydrogen gases may be *mixed* together in any proportions; and their disposition to become equally diffused in any given volumes, as with all gases, is so great, that even the vast difference in their specifick gravities will not keep them separate.

Fit two glass vials with corks, into which a glass tube may be inserted ten or twelve inches long, and about one twentieth of an inch bore. Fill one of the vials with oxygen, and the other with hydrogen. Place the former with its mouth upwards upon a table, and insert the cork with the tube; fit the cork into the latter, and fix it upon the other end of the tube with its mouth downwards. The hydrogen will descend and the oxygen ascend, notwithstanding the former is sixteen times lighter than the latter; and if they be permitted to remain two or three hours in the perpendicular position described, upon applying a light to either vial an explosion will take place.

This explosion, which in the above experiment testifies the mixture of the two gases, is produced by the sudden exertion of that higher degree of affinity between the two gases, which gives rise to *composition*, and which is brought into action by the high temperature of flame. The compound in this instance is *water*.

The composition of water may be demonstrated by *synthesis* (which means the formation of any body from its elements), and by *analysis* (the resolution of a body into its component parts). Eight parts by weight of oxygen combine with one part of hydrogen to form water.

Now, as hydrogen is the lightest known body in nature, and combines in the smallest proportion by weight, with the other simple substances, it is convenient to assume it as the standard of comparison for the combining proportions, or *equivalent numbers* of all other bodies; which, moreover, it is highly probable, are simple multiples of its number. Hydrogen, therefore, thus standing at the head of the scale, and being represented by 1, the equivalent of oxygen will be 8, and that of water 9.

Oxygen, however, is sometimes assumed as the standard of comparison, and represented by the number 10, in which case the equivalent for hydrogen is 1.25; the result is of course the same, the proportion of 1.25 to 10 being the same as that of 1 to 8. The choice is one of convenience, and on this account we prefer the former.

We shall, in the course of this treatise, attach to the name of each substance, placed at the heads of the sections, its simple number upon this scale of equivalents; it is of the greatest importance to impress them strongly upon the memory, and they will thus be perpetually presented to the eye in a prominent manner. Where the body is compound, we shall also affix the proportions of the elements of which it is compound.

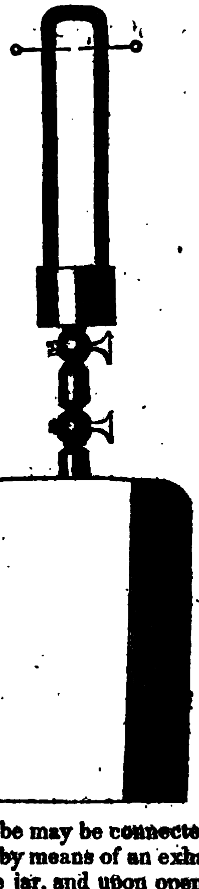
The composition of elastick fluids develops a still more simple law of combination in this class of bodies, than that of *definite weights*; it is that of *definite volumes*. The union of gases is always effected in simple proportions of their volumes; and a volume of one gas combines with an equal volume, or twice or three times the volume of another gas, and in no intermediate proportion

WATER.

Oxygen and hydrogen combine in the proportion of one volume of the former, to two of the latter, to form water.

The experiment is one of some nicety, but may be performed in the following way:—

Provide a very strong glass tube, closed at one end, and fitted at the other with a brass cap and stopcock, strongly fixed with cement. Two small holes must be drilled in the upper part of this tube, into which two wires must be cemented, the points of which must nearly touch one another on the inside. Let a mixture of very pure oxygen and hydrogen gases be very accurately made, in the proportions named above in a jar fitted with a stopcock, to which the cock of the tube may be connected. Extract the air from the tube by means of an exhausting syringe, screw it on to the jar, and upon opening the cocks a portion of the mixture will rush in. Again exhaust



the tube to secure the extraction of any remaining air. Replace it upon the jar, fill it again with the mixture, and carefully close the stopcocks. Pass an electrick spark through the wires, and the gases in the tube will explode. Allow the tube to cool, and upon opening the cocks, a fresh portion of the gases will rush in, which will be equal to the first quantity, provided the mixture has been accurately made, and the common air perfectly extracted. This portion may be again inflamed, and the progress continued, till a strong dew is seen upon the interiour of the tube. This, upon examination, will be found to be pure water.

If the mixture be made in any other proportion than that of one of oxygen to two of hydrogen, the excess of either gas will be left, for they will combine in no other. Those who have not the means of repeating this experiment, may convince themselves that the product of the combustion of hydrogen gas in oxygen is water, by burning a small stream of hydrogen from a bladder, under a bell-glass, with atmospherick air. As the combustion, i. e. the combination of oxygen and hydrogen, proceeds, water will condense upon the cold surface of the glass, and trickle down its sides.

We have already adverted to the *analysis* of water by means of the voltaick pile; it is in perfect accordance with its *synthesis*, and when both these processes agree in their results, the demonstration is the most perfect of which chymical philosophy is capable. The hydrogen given off at the negative pole is exactly the double in volume of the oxygen given off at the positive pole.

Water may also be decomposed, by means of heat and elective affinity, in the following way:—Take a gunbarrel, the breech of which has been removed, and fill it with iron wire coiled up. Place it across a common chafingdish, and connect to one end of it a small glass retort containing some water; and to the other a bent tube, opening under the shelf of the water bath. Heat the barrel redhot, by means of charcoal, and apply a lamp under the retort. The steam of water, in passing over the redhot iron, will be decomposed, the oxygen will unite with the iron, and the hydrogen may be collected in the form of gas. This is the most economical way of making hydrogen in large quantities. Those who have an opportunity of visiting an iron foundry, may see this process constantly going on; for when the melted metal is poured into the damp moulds, the water which they contain is decomposed, and the hydrogen which is given off is ignited; and generally, from its mixture with the air, produces a slight explosion.

If this experiment be made very carefully, by placing the iron wire, previously weighed, in a glass, or very compact earthen tube, instead of the gunbarrel, the weight which the iron will have acquired, added to the weight of the volume of gas produced, will be found exactly to make up the weight of the water decomposed; and they will be to one another in the proportion of eight to one.

It is needless to dwell upon the more obvious properties of the well-known fluid water, which is so abundantly diffused over the face of the earth. The purest state in which it is offered to us by nature, is as it descends from the clouds in the form of rain. It is colourless, inodorous and insipid; and these negative characters confer upon it its greatest value. To enumerate its uses would be to transcribe a long chapter indeed from the book of nature, and is quite incompatible with our present limits. We must confine ourselves to marking a few of its characteristicks in the three states in which it is presented to our observation, viz., as a liquid, a solid or *ice*, and an aeriform fluid or *steam*.

It has been an object of the greatest importance to ascertain with precision the weight of a given volume of pure water, as it is the standard with which all other liquids and solids are compared; as the weights of aeriform fluids are with atmospherick air. Moreover, the standard measure of capacity is the gallon, containing 10 lbs. avoirdupois weight (7000 grains = 1 lb.) of distilled water, weighed in the air at the temperature of 62° of Fahrenheit's thermometer; the barometer being at 30 inches. The capacity of this gallon is 277.274 cubick inches.

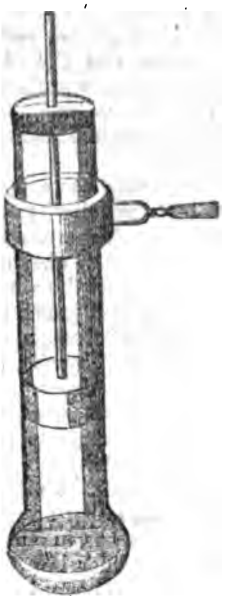
From the most careful experiments, it appears that a cubick inch of water, at the temperature of 60°, weighs 252.52 grains, and consists of 28.06 grains of hydrogen, and 224.46 grains of oxygen. The volume of the former gas is 1325 cubick inches, and of the latter 662, making together 1987 cubick inches; so that the condensation is very nearly 2000 volumes into one.

The effect of temperature upon liquid water is distinguished by a peculiarity of a very striking nature, and exhibits a departure from a general law of nature, for a purpose so obviously wise and beneficent, as to afford one of the strongest and most impressive of those endless proofs of design and omniscience in the frame of creation, which it is the most exalted pleasure of the chymist, no less than of the naturalist, to trace and admire.

All liquids, except water, contract in volume as they cool down to their points of congelation; but the point of greatest density in water is about 40°; its freezing point being 32°. As its temperature deviates from this point, either upwards or downwards, its density diminishes; or, in other words, its volume increases. This peculiar law is of much greater consequence in the economy of nature, than might at first be supposed. The water which covers so large a portion of the surface of the globe, is one of the most efficient means of equalizing its temperature, and rendering those parts habitable, which would otherwise be bound up in perpetual frost, or scorched with intolerable heat. The cold air which rushes from the polar regions progressively abstracts the heat from the great natural basins of water or lakes, till the whole mass is reduced to 40°; but at this point, by a wise providence, the refrigerating influence of the atmosphere becomes nearly null: for the superficial stratum, by further cooling, becomes specifically lighter; and instead of sinking to the bottom as before, and displacing the warmer water, it now remains at the surface, becomes converted into a cake of ice, and preserves the subjacent water from the further influence of the cold. If, like mercury, it continued to increase in density to its freezing point, the cold air would continue to rob the mass of water of its heat, till the whole sunk to 32°, when it would immediately set into a solid stratum of ice, and every living animal in it would perish: and in these latitudes, a deep lake so frozen would never again be liquefied.

Water, at the moment that it assumes the solid form of ice, experiences a sudden expansion of still greater amount than the preceding. Its bulk is enlarged in the proportion of nine to eight; and in the act of freezing, if confined, it is capable of bursting the strongest vessels. The common experience in hard frosts of the cracking of water pipes or of vessels in which water is suffered to freeze without room for this expansion, bears testimony to the fact. In consequence of its being specifically lighter, ice always swims upon the surface of water.

A cubick inch of water at 40° is expanded by heat into 1694 inches, or nearly a cubick foot of steam, at the temperature of 212°: at which point its elasticity is equal to the mean elasticity of the atmosphere, or 30 inches of mercury; and when given off in this state it occasions the phenomena of boiling. The principal properties of steam may be exhibited in the following way. Procure a glass tube, as in next figure, about ¼ inch bore and 7 or 8 inches in length, closed at one end, and a little enlarged at the same extremity, by blowing into it when softened by heat. Wrap a piece of thin wash leather round one end of a rod of wood 10 inches long, till it just fits into the tube and forms a piston, which will move freely in it. Pass the glass tube through a perforated cork, so as to form an exteriour collar at its upper end. Stick a fork into this to form a handle, by which it may be held over the flame of a lamp. Put a little water into the bottom and heat it. When it boils briskly the air will be expelled by the steam, and the piston is then to be introduced a little way. Plunge the tube into cold water, and the steam will be instantly condensed, and the piston will be driven down by the pressure of the atmosphere upon the vacuum thus formed under it. Cause the water again to boil, by holding it over the flame, and the elastick force of the steam will drive the piston upwards; which motions may be alternately produced by repeatedly heating and cooling the water in the bulb of the tube. It is the production and sudden annihilation of this elastick force which is the source of the prodigious power of the steam-engine.



Steam is perfectly transparent and invisible, as may be observed when the water boils and the tube is filled with it, or as it at first issues from the spout of a tea-kettle. It is only when it is beginning to be condensed that it puts on that cloudy appearance which many people suppose to be essential to it.

But steam is not only formed from water at its boiling point, but rises slowly and quietly from it at all temperatures, even below the freezing point. It is always found mixed with the permanent gases of the atmosphere, even in the driest weather; as may be seen by the dew which is deposited upon cold bodies, such as a glass of water fresh drawn from a well in summer. Its elasticity at the freezing point is equal to 0.200 inches of mercury, and its force increases in a geometrical progression for equal increments of temperature.

OXYGENIZED WATER.

It was long supposed that there was only one compound of oxygen and hydrogen; but another has lately been discovered, in which hydrogen is united with a double proportion of oxygen, the numbers being, hydrogen 1, oxygen 16, or equal volumes of the two.

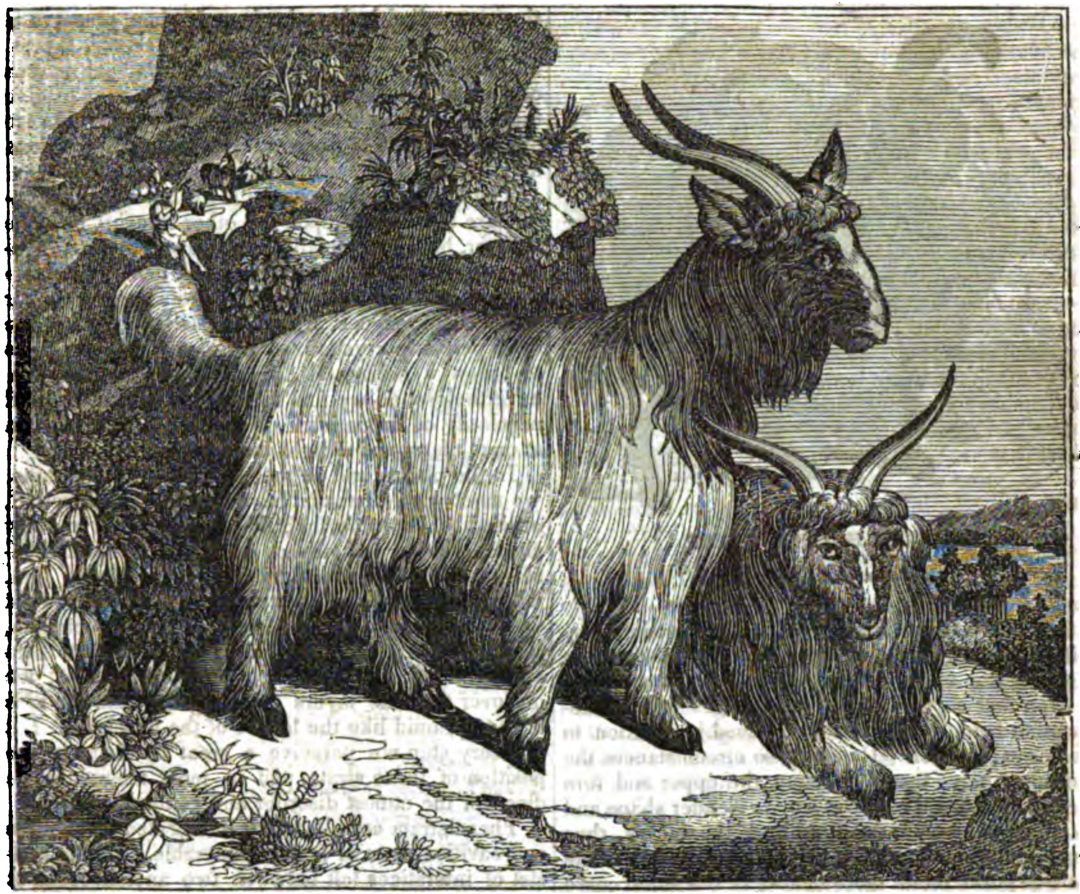
The only process at present known, by which it can be produced, is difficult, and complicated, and expensive: so much so, that it is doubtful whether it has been ever tried in this country or even in England. We shall therefore pass it over, at present, and merely mention, that this oxygenized water is possessed of new and very remarkable properties. It is necessary to keep it surrounded by ice; for at a temperature of 58° it is decomposed, and oxygen gas is given off in abundance. It is liquid and colourless, like water: but produces upon the tongue a metallick taste. It attacks the skin with rapidity bleaches it, and occasions a smarting sensation. By throwing some metals into it, in a state of fine division, such as silver or platinum, explosions are produced without effecting any change upon them in a way which is not easily understood.

In the systematick language of chymistry (which has greatly conduced, by its simplicity and its ready adaptation to new facts, to the advancement of the science; and the principles of which we shall endeavour to explain as we proceed,) the combinations of oxygen with other bodies, which are not acid, are termed *oxydes;* and if more than one such compound with the same body should be known, they are distinguished as first, second, or third oxyde, by the appellations, derived from the Greek numerals, of *prot*oxyde, *deut*oxyde, *trit*oxyde, or the furthest degree of oxydation is denoted by the term *per*oxyde. In the language, therefore, water is the *prot*oxyde of hydrogen; and the compound to which we have just referred is the *deut*oxyde, or *per*oxyde of hydrogen.

NATURAL HISTORY.

THE CACHEMIRE GOAT.

The following representation of the Cachemire Goat is taken from the fine work of F. Cuvier and G. St. Hilaire, on Mammiferous Animals. The specimen, in the Jardin des Plantes at Paris, of which that work contains a portrait, was sent from Calcutta.



CACHEMIRE GOATS.

having been obtained from the menagerie of the governour-general of India, where it was born of a couple that came direct from Cachemire to Bengal. The wool of this goat appears, by a scrupulous comparison, to be quite as delicate as the finest brought from Thibet. Cachemire, however, contains several breeds of goats with fine wool; a specimen was recently sent to England, which differed from that in France by having longer ears. But they all yield apparently, the same produce; for the fineness of the wool is occasioned by the influence of the climate.

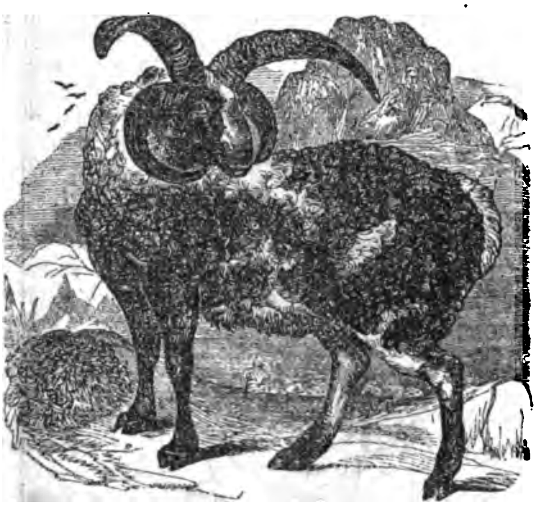
There are two sorts of hair which nature seems to have furnished, more or less to every quadruped: the one, fine, curly, generally gray, and imparting to the skin a down more or less thick, as if to guard it against cold and damp; the other, coarse, flat, giving a general colour to the animal, and appearing in numerous instances to be an organ of sensation.

These two sorts of hair generally become thicker, according to the degree of cold to which they are exposed; and the frizzled hair becomes gradually finer as the cold increases in dryness. It is this frizzled hair of the Cachemire goat which renders these animals so valuable; for to this we owe those delicate shawls which are so deservedly esteemed for a variety of qualities found in no other article of clothing.

The French have attempted to introduce this breed of goats into their own country; but the success of the experiment seems somewhat doubtful. It is however, singular, as observed by Messrs. Cuvier and Hilaire, that no European has yet availed himself of the wool produced by most of our domestick goats, which, though less delicate than the Thibet, would undoubtedly have yielded a web far more fine and even than the most admired merino sheep.

The male goat, in the menagerie of the Jardin des Plantes, is admired for his symmetry, his graceful motion, and his quiet temper. But he has a much greater distinction—he is free from smell; whereas nearly all European goats are known to emit a strong unpleasant odour. The Cachemire goat is of middling size; two feet high at the neck joint, and two feet ten inches from the snout to the root of the tail; his head from the snout between the horns is nine inches, and his tail five. His horns are erect and spiral, diverging off towards the points. His silky hair is long, flat, and fine, instead of gathering up in bunches like that of the Angora goats. It is black about the head and neck, and white about the other parts of the body. The woolly hair is always of a grayish white, whatever be the colour of the rest.

Pursuit of knowledge.—By looking into physical causes our minds are opened and enlarged; and in this pursuit, whether we take or whether we lose the game, the chase is certainly of service.—*Burke.*



THE FOUR-HORNED SHEEP.

Ovis Aries. Var. Polycerata.

One of the most curious modifications produced by cultivation in the domesticated Sheep consists in the augmentation of the number of its horns; two, three, or even four supplementary appendages of this description being occasionally produced in addition to the normal number. Under these circumstances the additional horns usually occupy the upper and fore part of the head, and are of a more slender shape and take a more upright direction than the others, thus approaching in character to those of the Goat, while the true horns retain more or less of the spiral curve that distinguishes those of the Sheep. There exists a strong tendency to the hereditary propagation of this monstrosity, which is extremely frequent in the Asiatick races, but is also met with in a breed that is common in the North of Europe, and is said to have been originally derived from Iceland and the Feroe Islands. In the latter case it is unconnected with any other anomaly; but in the flocks of the nomad hordes of Tartary it is usually combined with an enlargement of the tail and adjacent parts, by the deposition of fat, frequently to an enormous extent.

The specimen above is remarkable only for the number of its horns. The lateral or true horns rise from their usual point of attachment, and describe a spiral curve round the animal's ears. The accessory horns, two in number, take their origin more internally and between the others, and pass almost directly upwards, inclining, as they advance, in a direction forwards and outwards.

PHYSICAL GEOGRAPHY.

Interiour Structure of the Solid Parts of the Earth.—Of Beds, Strata, Caverns, and Veins.

Excavations have uniformly shown, that the greater portion of the earth, consists of strata of materials of different natures, irregularly disposed. When these strata are of a similar nature, and of great thickness, they are called beds or banks. If they preserve a horizontal position, we call their subdivisions layers. The almost vertical position of the principal masses of most of the higher mountains, obliges us to give them the name of blocks. Sometimes the blocks are divided by vertical fissures, and then their positions may be called leaves or laminæ.

The different masses which we have just indicated, are thrown one upon the other in every possible manner, both horizontally and at every angle. Frequently in moderate elevations, and more particularly in lowlands, the different strata preserve, for hundreds of leagues, a parallel position. Even the most perfectly crystallized rocks appear sometimes to follow a horizontal direction. What confusion nevertheless, do we find by the side of this tranquil regularity of formation! What traces of destruction at once alarm and delight the observer of nature!

In the plains, and on moderately high mountains, we meet with strata that have been entirely inverted, or partly shifted from their first position, bent in every shape, crooked and curved, and returning upon themselves. We find considerable strata in Mount Jura, which, having been overturned or pushed forward upon others, have stopped in a position so precarious, that the application of the least force would put them again in motion. In the pyramidal mountains, we discover that the layers are ranged round the axis of the pyramid like the leaves of the artichoke. But at every step we perceive a great diversity in the position of these strata, and in most mountains we discover the utmost disorder and confusion.

These strata are almost all intersected by fissures and cavities more or less considerable. Some consist of interstices left between two ancient rocks at the moment of their crystallization; the great majority appear to owe their origin either to the retiring or sinking of the earth. The first of these causes has considerably increased them in the calcareous mountains of secondary formation; they are less frequent in gypsum. Some of these fissures have been filled with metallick substances, some by the filtering of water impregnated with stony matter, others by incrustations, by alluvial minerals, by vegetable, and animal earths; lastly, some have remained open, and form ravines, precipices, abysses, when they are open to the sky; or caverns, and grottoes, when they have walls and a natural roof.

In a general view of the globe, we remark some very considerable caverns, but their dimensions have generally been much exaggerated. The depth of that of Eldon Hole, near Castleton in Derbyshire, has not been discovered, though sounded with a line of more than 9,600 feet. Near Fredrickshal in Norway, there is a hole, into which, if stones be thrown, two minutes appear to elapse before they reach the bottom, from which it has been concluded that the depth was 11,000 feet. Among the numerous caverns of Carniola, that of Adelsbury it is said affords a walk of about sixteen miles. It is said of the mammoth cavern of Kentucky, that by clearing a few obstructions, a coach may be driven therein for nearly fifteen miles. Numerous caverns are remarkable for natural curiosities. There are some from which, in summer time, an ice-cold wind issues with astonishing force. There are others, whose walls are in August covered with ice, which melts in December. The little communication which these caverns have with the external air, causes them to change their temperature long after it becomes changed upon the surface of the earth. The most interesting caverns, and the most curious for their natural productions, are certainly those from whose roofs water drops, impregnated with calcareous matter, and which, either soon hardening, remains suspended from the vaults of the caverns, in the shape of long crystals, or falling to the ground, assumes a thousand fantastick forms; often representing various animals and vegetables. The naturalist prefers those caverns which contain petrified bones. Those are the visible portions of vast burial places, where the revolutions of the globe have deposited whole generations of living beings. There are also some caverns, whither certain species of marine animals withdraw, when they feel themselves about to expire.

There are caverns which contain deep pits of water, or wells, sometimes so extensive as to acquire the name of subterraneous lakes. There are others from which rivers derive their source; while some are known to receive very considerable streams, which lose themselves in the interiour. It is to similar reservoirs that we must attribute the periodical disappearance of the lake of Arknitz, in the Julian Alps. There are some caverns in Norway, where, as you walk upon an arched calcareous floor, you hear the roar of invisible torrents under your feet. Many caverns in Russia and in Siberia, have been evidently formed by means of water, and even masses of ice.

Volcanick caverns form a distinct class. That of Surtur, in Iceland, which is 5034 feet long, has three of its sides, or walls, covered with a greenish black varnish, formed by a volcanick vitrification. Long pieces of lava are suspended from the roof, which is so chinky in many places as to admit the rays of the sun. The most magnificent of all known caverns, is doubtless that called "Fingal's Cave," in the Isle of Staffa, on the western coast of Scotland. Thousands of majestick columns of basalt support a lofty roof, under which the sea rolls its waves, while the vastness of the entrance allows the light of day to penetrate the various recesses of the cave.

The small fissures which pass through the masses of rocks, and which we call by the general name of veins, although they present to the imagination a less striking appearance than that of caverns, yet to the eye of reason and of science, exhibit a still more complicated enigma. The essential character of a vein, is that of cutting or passing through a mass of rock, in a direction more or less different from that of the strata or layers, of which the rock or mountain is formed, and being filled with a mineral substance different from that of which the rock itself is composed. We sometimes find veins of twenty or thirty feet in thickness, while others are less than an inch. Some continue for the space of several leagues, others divide and disperse themselves in smaller veins. There are cases in which the veins, after having passed through many strata, suddenly break off at the commencement of a stratum of a particular sort, and reappear on the opposite side, exactly in the same direction, and of the same thickness that they had at first. The general line of veins is rectilinear, but without any preference as to direction. In the middle class of mountains, they follow the direction of the valleys. The matter with which the vein is filled, frequently contains metallick ores, and is then called *Gangue*, or that part to which the metal adheres. There is scarcely any mineral that is not found in some vein or other, more or less abundantly. Some also contain petrifactions, which seems to prove, that these fissures were originally empty, and had been filled from above, by means of a fluid loaded with various substances, which it deposited in them. This is the opinion generally admitted. Some philosophers have regarded metallick veins as branches of a grand metallick trunk, concealed in the interiour of the globe, and to which they have attributed a sort of vegetation, or organick matter. The theory of veins, however, according to every supposition, is very difficult to comprehend.

The thickness of the various strata, differs as much as their inclination or position, and as their fissures. Many of the middle class of mountains contain beds of mineral or rock strata, of alum, and of coal, thirty or forty feet thick. But there are also some strata of coal, not more than one inch in thickness. White and black marbles are found in thicker strata than those which are variegated; and in general those substances which are least mixed or compound, are found in the greatest masses. In Europe, continued strata or beds, of the thickness of three thousand feet, are extremely rare; but in Mexico and Peru, there are masses of porphyry, which are from 9,000 to 12,000 feet thick.

We call those beds or strata *primary*, which are found at the greatest depths to which man has been able to penetrate. These masses do not in general contain any traces of animals or vegetables; and in this point of view they may be called *primitive*, or *primordial*. The next order, or that of secondary strata, comprehends all those masses which form mountains, and are placed in regular strata or layers, containing the remains of animals and of vegetables, and lying upon the primary strata. The third order consists of such beds as contain fragments of secondary strata, mixed more or less frequently with the materials of the primitive class. They lie above the secondary strata, and are heaped together in a more confused manner.

The order which all the primitive rocks observe among themselves, is not yet determined by observation. Granite is almost universally considered as forming a sort of vault surrounding the globe, and supporting all those masses which seem to have been heaped upon it by the double action of a general crystallization, and a violent jumbling. We have never yet found granite lying upon porphyry, upon schist, or upon any other rock whatever; but the relative order of all the other rocks seems to vary much. The only principle that appears to be determined is, that the primitive or primordial rocks are never placed in great masses upon the others, while the others are constantly found accumulated upon them.

At the base of these mountains of the first order, we commonly find calcareous rocks of transition, that is, rocks which in part seem partly calcareous and partly mixed with animal remains.

The secondary rocks, found commonly in regular strata, give a peculiar and characteristick appearance to the mountains which are composed of them. Their outlines are less broken than those of the primary mountains, their summits less lofty; but vegetation displays its richness upon their gently-inclined sides of chalk and clay, covered very frequently with a layer of marl, and filled with the remains of animals and vegetables, different from those now existing in a living state. The argillaceous schist bears marks of an entire vegetation anterior to the present constitution of the globe. In the marly-bituminous schist, we meet with petrified fish, and many impressions of aquatick animals; and the calcareous rocks contain the bones of quadrupeds. These three strata, and others which are analogous to them, frequently succeed each other in such a manner, that the remains of vegetables are placed below, and those of quadrupeds nearest the surface.

Some rocks, as siliceous sand-stone, gypsum or plaster of Paris, follow no regular order of succession. What chiefly characterizes stratified mountains, is rock or mineral salt, saline springs, mineral waters, layers of coppery schist, alumine, calamine bituminous earths, with petroleum, or rock oil, and naphtha; and lastly, coal. All these substances are accumulated in layers or beds, the succession of which constantly varies, but which all belong exclusively to stratified mountains.

A third order, which we call *tertiary*, are also found in the midst of a confused mass of small portions of substances, which seem to have been accumulated by some fluid, that has transported, or at least rolled and mixed them together. These form the bottoms of valleys, and are almost always placed upon the stratified rocks. Tafa, conglomerates, and breccias, are the principal strata of this kind.

The remains of large quadrupeds and other analogous animals now unknown in a living state, are found in these beds; there also are seen vast quantities of peat or turf, which are the remains of a recent vegetation mixed with bituminous earth.

Besides these distinct beds, or strata, the earth presents to us a great number of confused masses.

All the banks of rivers and lakes, and the shores of the sea, are covered with pebbles, rounded by the waves which have rolled them against each other, and which frequently seem to have brought them from a distance. There are also similar masses of pebbles found at very great elevations, to which the present sea appears never to have been able to reach. The largest pebbles occupy the summits of some mountains, and their size diminishes as they approach the base.

The distinct character of lavas are much better known, and their various forms easily accounted for. The strata which we observe in lava indicate the number of volcanick eruptions which have successively produced these strata.

The fragments of granite and other pure rocks, thrown here and there upon stratified rocks, and even upon alluvial lands, exhibit a phenomenon as indisputable as it is astonishing. All the chains of Mount Jura, all the mountains which skirt the Alps, the hills and even the plains of Germany and Italy, have blocks of granite scattered over them, frequently of large dimensions, and always of as pure a composition and as beautifully crystallized as the granite of the highest Alps. They are scattered over the low country along the Atlantick coast, to the S. and S. E. of the primitive region occupying New England and the E. slope of the Allegany mountains, over the shell limestone along the Mohawk, S. of the granite mountains W. of Lake Champlain, and along the S. shores of the upper lakes. They are also found in many other parts of the world, some of them completely rounded by the action of rain, and near six thousand feet above the level of the sea.

In thus reviewing the structure of the globe, we are struck with the disorder and confusion that everywhere mark its surface; it seems a vast ruin; and the confusion and overthrow of most of its strata, the irregular succession of those which seem to remain in their original situations, the wonderful variety which the direction of the veins and the forms of the caverns display, the immense heaps of confused and broken substances, the transportation of enormous blocks to a great distance from the mountains of which they appear to have formed a part—every thing, in short, assures us that the history of our globe reaches back to periods far anterior to the existence of the human race, and makes us feel poor in the knowledge we have attained, even of the present state of its surface.

BOTANY.

We have deemed it proper to introduce this department into our pages, because we esteem botany a science as useful and important as it is pleasing. We are aware that some are disposed to look upon this study as being effeminate in its nature and influence, and as of little or no value except to medical men. These people are certainly in errour. To cast about, and reflect for one moment upon the extent of our dealings with the vegetable world, is to feel convinced of the necessity and importance of a more intimate acquaintance with it than we generally possess. A knowledge of botany is essential to the farmer and the horticulturalist, because they cultivate plants; it is essential to the mechanick, because he derives many of his materials from the vegetable world; to the merchant, because he trafficks in plants in different shapes; to the apothecary and the physician, because they procure most of their drugs and medicines from the vegetable world; to the clergyman, because he may there behold the perfection of the works of the Great Designer carried out into its minutest details; to the lawyer, because it leads him to contemplate the most wonderful and the most perfect of laws.

Botany is comparatively a modern science. The first writers classified plants, according to their general resemblances. Theophrastus has his water-plants, and parasites, potherbs, and forest trees, and corn-plants; Dioscorides, aromaticks and gum-bearing plants, eatable vegetables, and corn-herbs, and many who have imitated them have retained the same method of arrangement. In 1570, a Fleming of the name of Lobel, improved upon the old modes of distinction, by taking into account characters of a more definite nature, and thus laid the foundation of the modern accurate mode of studying vegetation. Many others succeeded this author, who, while they disagreed upon the value to be ascribed to the small number of modifications of structure with which they were acquainted, adhered to the ancient plan of making their classification coincide with natural affinities. Among them the most distinguished were Cæsalpinus, an Italian, who published in 1583, John Ray, an Englishman, and the celebrated Tournefort, who wrote near the end of the seventeenth century. At this time the materials of botany had so greatly increased, that the introduction of more precision into arrangement became an object of high importance; and this led to the contrivance of a plan that should be to botany what the alphabet is to language, a key by which what is really known of the science might be readily ascertained. With this in view, Riomus invented, in 1690, a system depending upon the conformation of the corolla of plants; Ramel, in 1693, upon the fruit alone; Magnol, in 1720, on the calyx and corolla; and finally, Linnæus, in 1731, on variations in the sexual organs. The clearness and simplicity which distinguished the plan of the last author, have given it a celebrity which it continues to maintain to this day. The Linnæan system, however, is the artificial system, and perhaps was only justified by the state of the science in which he found it in his day. But so great have been the improvements in opticks, and the modern discoveries so various and extensive, that we feel assured that our more intimate knowledge of the phenomena of vegetable life, will abundantly justify us in relinquishing the artificial plan of Linnæus, and adopting the natural system.

The object of the artificial system is merely to furnish a method for ascertaining the name of a plant. The object of the natural system is to bring together into small groups, plants which resemble each other in their botanical affinities, sensible qualities, and medicinal properties. The artificial system is compared to the dictionary, and the natural to the grammar of a language.

The art of searching out the name of a plant is denominated the analysis of a plant. In endeavouring to ascertain its specifick name, we trace it through several intermediate steps. Species are grouped together under generick names—genera under orders—orders under classes. For example, we see the common wild strawberry for the first time; and are desirous to learn its name. By comparing the proper organs with the description of the classes, we find it belongs with the group of plants, which constitute a class, called *Icosandria*. This class is subdivided into orders, and we find our plant is to be referred to the order *Polygynia*. Here we find the names of several genera—such as the rose, the raspberry, the strawberry, the fivefinger the avens, &c. On comparing our plant with all the genera under this order, we find it will agree with none but the strawberry.

On turning to the strawberry (under the botanical name *fragaria*) we find there are several kinds of strawberry. Each kind is called a species, as the English strawberry, hautboy strawberry, pineapple strawberry, wild strawberry, &c., are of different species. On carefully comparing our plant with the descriptions of all the species, we find it will agree with none but the wild strawberry. Thus we arrive at the generick name strawberry (*fragania*), and specifick name, wild (*virginiana*).

The artificial classification of plants is founded upon the circumstances of the stamens. Each class is subdivided into two or more orders. These subdivisions are founded upon the number of styles—the condition of the seeds—the length of body—the comparison between florets, &c. The names and descriptions of these classes and orders, with a definition of botanical terms, we will give hereafter.

The natural arrangement of plants is founded upon their agreement in habits, and mostly in medicinal properties according to Linnæus. Jussieu, however, improved upon Linnæus, and found that plants were susceptible of a natural arrangement founded upon the circumstances of their seeds. We shall attend to that arrangement hereafter.

THE BAMBOO.

The bamboo is a native of the hottest regions of Asia. It is likewise to be found in America, but not in that abundance with which it flourishes in the old world. It is never brought into this country in suff ficient supply for any useful purposes, being rather an object of curiosity than of utility. But in the countries of its production it is one of the most universally useful plants. "There are about fifty varieties," says Mr. Loudon, in his Botanical Dictionary, "of the *Arundo bambos*, each of the most rapid growth, rising from fifty to eighty feet the first year, and the second perfecting its timber in hardness and elasticity. It grows in stools which are cut every two years. The quantity of timber furnished by an acre of bamboos is immense. Its uses are almost without end. In building it forms almost entire houses for the lower orders, and enters both into the construction and furniture of those of the higher class. Bridges, boats, masts, rigging, agricultural and other implements and machinery; carts, baskets, ropes, nets, sailcloth, cups, pitchers, troughs, pipes, for conveying water, pumps, fences for gardens and fields, &c, are made of it. Macerated in water it forms paper; the leaves are generally put round the tea sent to Europe: the thick inspissated juice is a favourite medicine. It is said to be indestructible by fire, to resist acids, and by fusion with alkali, to form a transparent permanent glass."

PHYSICAL EDUCATION.

I. *Of Exercise, or rather of the want of Exercise, in Boardingschools, and some of its consequences.*

"Boys enjoy exercise freely, and of the best kind, in the unrestrained indulgence of their youthful sports. By means of these, every muscle of the frame comes in for its share of active exercise, and free growth, vigour, and health are the result. It would be happy for girls, if some portion of such latitude were allowed to them also. But it is far otherwise. Even under the more favourable circumstances of country life, they are too much restricted from the free exercise which health requires. Their very dress unfits them from taking it, and the alleged indecorum of those active movements to which youth and spirits instinctively incite, is a bar to even the attempt being made. At their age, the measured, slowpaced, daily walk is quite insufficient even for the muscles specially engaged, while it leaves many others wholly unexercised. If this be true of the more hale and robust inhabitants of the country, how much more forcibly does it apply to the delicate and attenuated residents of towns, and especially to the inmates of female schools. Of these establishments the systems and habits require much revision, and until some effective reformation takes place, of which there is yet but little prospect, they will not fail to excite our sympathy and regret for the blanched aspects, shadowy forms, and sickly constitutions so continually presented, and which it is so painful to witness. Such beings are as little fitted for encountering the toils or fulfilling the duties of life, as are the plants of a hothouse for being transferred to the open borders.

"The amount of exercise, or rather the extent to which the *want of exercise* is carried, in many boardingschools, will appear incredible to those who have not personally investigated the subject. The following is the *carte* of a young ladies' boardingschool, drawn up on the spot, a few years since, from the report of several of its inmates:—

At 6 in the morning the girls are called, and rise.
From 6 to 8, learning or saying lessons *in school.*
8 to 8½, at breakfast.
8½ to 9, preparing lessons *out of school* (*some of* the girls permitted to do so in the garden).
9 to 1, at various tasks in school.
1 to 1½, out of school, but must not go out of doors; reading, or working, and preparing for dinner.
1½ to 2, at dinner.
2 to 5, in school, various tasks.
5 to 5½, at tea.
5½ to 6, preparing to go out; dressing, or reading, or *playing in school.*
6 to 7, walking, generally arm-in-arm, on the high-road, many with their books in their hands, and reading.

"Two days in the week they do not walk in the evening at all, being kept in for *dancing;* but, by way of amends, they go out on two other days, from 12 to 1, and then they miss *writing*. It is to be remarked that they *never go out unless the weather is quite fine at the particular hours allotted for walking.*

They go to church all the year round, twice every Sunday, on which day no other exercise is taken.

From 7 to 8, for the older girls reading or working in school, (this is optional,) and then prayers; for the younger, play in school, and prayers.
At 8, the younger go to bed.
From 8 to 9, the older, reading or working, as before.
9, to bed.

"The twenty-four hours are, therefore, thus disposed of:—

	Hours.
In bed, (the older 9, the younger 10,) - -	9
In school, at their studies and tasks - -	9
In schools, or in the house, the older at optional studies or work, the younger at play -	3½[*]
At meals - - - - - - - -	1½
Exercise in open air - - - - - -	1
	24

"The above account was taken from a second or third-rate school, and applies more particularly to the season most favourable for exercise,—*summer*. It is to be remarked that the confinement is generally greater in these than in schools of a higher order. That the practical results of such an astounding regimen are by no means overdrawn by Dr. Barrow, is sufficiently evinced by the following fact, a fact which we will venture to say may be verified by inspection of thousands of boardingschools in this country. We lately visited, in a large town, a boardingschool containing forty girls; and we learnt, on close and accurate inquiry, that there was *not one* of the girls who had been at the school two years (and the majority had been as long) that was not more or less *crooked!* Our patient was in this predicament; and we could perceive (what all may perceive who meet that most melancholy of all processions—a boardingschool of young ladies in their walk) that *all* her companions were pallid, sallow, and listless. We can assert, on the same authority of personal observation, and on an extensive scale, that scarcely a single girl (more especially of the middle classes) that has been at a boardingschool for two or three years, returns home with unimpaired health; and, for the truth of the assertion, we may appeal to every candid *father* whose daughters have been placed in this situation. Happily, a portion of the ill health produced at school is in many cases only temporary, and vanishes after the return from it. In the schools in which the vacations are frequent or long, much mischief is often warded off by the periodical returns to the ordinary habits of healthful life; and some happy constitutions, unquestionably bid defiance to all the systematick efforts made to undermine them. No further proof is needed of the enormous evil produced by the present system of school discipline than the fact, well known to all medical men, that the greater proportion of women in the middle and upper ranks of life do not even enjoy a *moderate* share of health; and persons, not of the medical profession, may have sufficient evidence of the truth, by comparing the relative powers of the young man and young women of any family in taking bodily exercise, more particularly in *walking*. The difference is altogether inexplicable on the ground of sex only.

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[*] Younger only two hours and a half.

"II. *Of the Effects of the Attempts to produce 'a good Carriage.'*

"The first errour is that of restraining the free motions of the body and limbs, so natural at this period of life, and in which the young of both sexes so much delight. The young lady is now to cultivate manners, to practise a certain demureness supposed to be becoming, to attend to her carriage, keeping her head erect, and her shoulders drawn back; and if from inability to continue the muscular efforts necessary for this end, she fail to do what nature does not empower her to accomplish, negligence or obstinacy is imputed, reproach is cast, which, being felt as unjust, irritates the moral feelings; and thus a slight errour in physical discipline becomes a fruitful source not only of bodily injury but of moral depravation. It is a well-established fact with respect to muscular energy, that the contractions of muscular fibres on which their actions depend, require intervals of relaxation; that, if the contractions be prolonged without this relief, they in a certain time fail, so that no effort of the will can continue them. In other words, the muscles tire, and an interval of repose is necessary to fit them for renewed effort. This is familiarly instanced by the experiment of holding the arm extended, when, even though no weight be held in the hand, the continued muscular action required for maintaining this position cannot be sustained for many minutes. If this be true of the firm and robust muscles of adults, how much more forcibly does the principle apply to the tender and immature muscles of early life? To preserve a good carriage, to keep the head and shoulders continually in that position, which the dancing-master approves, require considerable muscular powers, such as no girl can exercise without long, painful, and injurious training, nor even by this, unless other measures to be hereafter noticed, be resorted to in aid of her direct endeavours. We would not here be understood as undervaluing a good carriage, which is not only pleasing to the eye, but is, when natural, absolutely conducive itself to health, as resulting from that relative position of the several parts connected exteriorly with the chest, which allows greatest freedom to the internal organs. To ensure a good carriage, the only rational way is to give the necessary power, especially in the muscles chiefly concerned; and this is to be done, not by wearying those muscles by continual and unrelieved exertion, but by invigorating the frame generally, and more especially by strengthening the particular muscles through varied exercise alternated with due repose.

"Direct endeavours to enforce what is called a good carriage necessarily fail of their effect, and instead of strengthening they enfeeble the muscular powers necessary for maintaining it. This fact soon becomes perceptible; weakness is noticed, and instead of correcting this by the only rational mode, that of invigorating the weakened muscles, mechanical aid is called in to support them, and laced waistcoats are resorted to. These undoubtedly give support,—nay they may be so used as almost wholly to supersede the muscular efforts, with the advantage of not tiring, however long or continuously employed. Improvement of carriage is manifested, the child is sensible of relief from a painful exertion, the mother is pleased with the success of her management, and this success appears to superficial observation fully to confirm the judgment which superintends it. In the present ignorance that prevails on all points of animal physiology, it would be quite impossible to convince any mother so impressed that she was doing otherwise than ministering to her child's welfare. Yet what are the consequences to which her measures tend, and which such measures are daily and hourly producing? The muscles of the back and chest, restrained in their natural and healthful exercise by the waistcoats called in to aid them, and more signally in after life by the tightly-laced stays or corsets, become attenuated, and still further enfeebled, until at length they are wholly dependant on the mechanical aid, being quite incapable of dispensing with it for any continuance.

"At first, laced waistcoats are used rather for the convenience of suspending other parts of the dress than with any view of giving support to weak muscles, or of influencing the shape; and confined to such use they would be perfectly harmless. In time, when weakness becomes inferred, not from any evidences of actual debility, but merely from the girls not being able to maintain the unnatural and constrained posture which fashion and false taste enjoin, the advantage of compressing the chest by means of the waistcoat, so as to give support to the muscles of the back, becomes discovered, and the mechanical power supplied by the lace affords but too effective means of accomplishing this compression. The effect pleases the mother, promoting, as it does, her dearly-prized object—a good carriage; it is endured by the girl as the lesser of two evils, for though at first irksome, it releases her from the pain of endeavours which she has not power to continue to the extent required.

"III. *Of the Operation and Effects of Stays.*

"As years advance, various causes combine to render this practice more inveterate and more pernicious; and still the potent instrument, the lace, lends its ready and effectual aid. Now a taper waist becomes an object of ambition, and the stays are to be laced more closely. This is still done gradually, and, at first, imperceptibly to the parties. The effect, however, though slow, is sure, and that powers of endurance thus exercised come in time to bear almost unconsciously what, if suddenly or quickly attempted, no heroism could possibly sustain.

"The derangements to which this increased pressure gives rise must now be considered. The first is the obvious impediment to the motions of the ribs which this constriction of the chest occasions. For perfect respiration these motions should be free and unrestrained. In proportion as respiration is impeded, is the blood imperfectly vitalized; and in the same ratio are the nutrient and other functions, dependant on the blood, inadequately performed. Here, then, is one source of debility which affects the whole frame, reducing every part below the standard of healthful vigour. According, also, as each inspiration of air becomes less full, the wants of the system require, as a compensation, increased frequency; and thus quickened respiration commences, disturbing the lungs, and creating in them a tendency to inflammatory action. The heart, too, becomes excited, the pulse accelerated, and palpitation is in time superadded. All these effects are capable of resulting from mere constriction of the chest; they become fearfully aggravated when, at a more advanced stage, additional sources of irritation arise in flexure of the spine, and in derangements of the stomach, liver, and other organs subservient to digestion. The foregoing disturbances are formidable enough, and sufficiently destructive of health, yet they are not the only lesions (injuries) which tight lacing induces. The pressure, which is chiefly made on the lower part of the chest, and to which this part most readily yields, extends its malign influence to the abdominal viscera also. By it the stomach and liver are compressed, and, in time, partially detruded from the concavity of the diapraghm, to the great disturbance of their functions; and being pressed downwards too, these trespass on that space which the other abdominal viscera require, superinducing still further derangements. Thus, almost every function of the body becomes more or less depraved. Nothing could have prevented the source of all this mischief and misery from being fully detected and universally understood, but the slow and insidious process by which the aberration from sound principle effects its ravages.

"The mere weakness of back, so often adverted to, becomes in its turn an aggravating cause of visceral lesion. The body cannot be always cased in tightly-laced stays; their pressure may be endured to any extent under the excitement of the evening display, but during the day some relaxation must take place. Under it, the muscles of the back, deprived of their accustomed support, and incapable of themselves to sustain the incumbent weight, yield, and the column of the spine bends, at first anteriorly, causing round shoulders and an arched back; but eventually inclines to one or other side, giving rise to the well-known and too frequently occurring state of lateral curvature. This last change most frequently commences in the sitting posture, such females being, through general debility, much disposed to sedentary habits. As soon as lateral curvature commences, the lungs and heart become still more disturbed; anhelation (difficulty of breathing) from slight exertion, short cough, and palpitation ensue; and at this time, chiefly in consequence of the pulmonary derangement, alarm begins to be entertained, and the approach of phthisis apprehended."

The following figures, taken from a valuable work in German, by the late Professor *Soemmering, on the Effects of Stays*, cannot fail to make an impression on the mind of every parent and guardian of youth:—

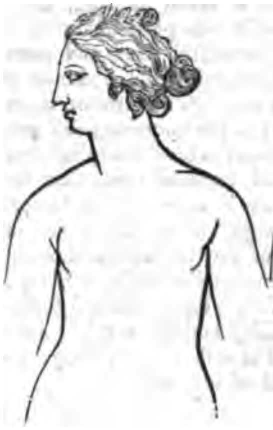


Fig. 1.

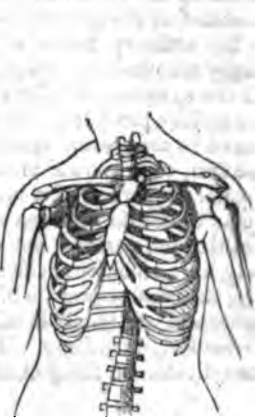


Fig. 2.

Fig. 1, is an outline of the famous statue of the Venus de Medici, and may be considered as the *beau ideal* of a fine female figure.

Fig. 2, is the skeleton of a similar figure, with the bones in their natural position.

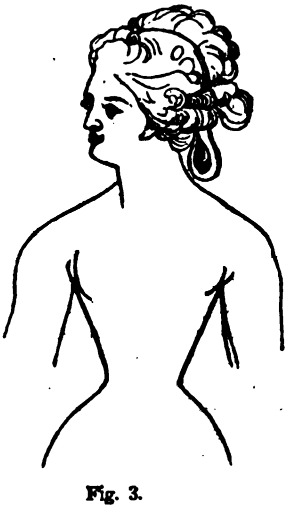


Fig. 3.

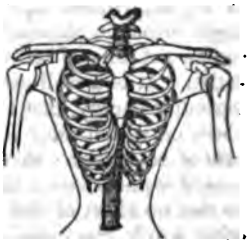


Fig. 4.

Fig. 3, is an outline of the figure of a modern "boardingschool miss," after it has been permanently remodelled by stays.

Fig. 4, is the skeleton belonging to such a figure as No. 3.

We are assured by medical men of the first authority that there is no exaggeration in these outlines. Such melancholy specimens are daily to be met with, both living and dead.

NATURAL MAGICK.

Accustomed to derive our knowledge of the material world, chiefly from our faculties of sight and hearing, we are little aware of the extent to which these faculties deceive us. The eye gives to objects forms and colours different from those they usually wear; and the cheats of the fancy are so vivid as not to be distinguishable from the real views of sight. We are, too, constantly liable to be deceived by the imagination into the belief that we hear sounds which either do not exist at all, or are of a totally different nature from what we suppose them to be. Human ingenuity has availed itself of these illusions, and heightened their effect by a thousand contrivances, which, though used in former times to work on the superstitious belief of the world, now contribute only to the harmless amusement of a more enlightened age. Dr. Johnson has often been ignorantly sneered at, for his tendency to a belief in apparitions; but it is impossible to read this book without being convinced that that great man reasoned as soundly on this as on other subjects. He maintained that there were cases of apparitions, which were proved, according to the strictest laws of evidence. This opinion is fully confirmed by Dr. Brewster; who, however, explains away, upon scientifick principles, unknown in the days of Dr. Johnson, many cases of the supposed appearances of ghosts which were well authenticated at the time. His belief, therefore, under the circumstances, was in truth more philosophical than the general unbelief of other men in his day.

One of the most valuable parts of the work is, the clear descriptions it contains of many mechanical contrivances for deceiving the senses, and for imitating the actions of living beings.

Of these, the celebrated exhibition of the *Invisible Girl*, was one of the most remarkable. "As the mechanism employed," says Dr. Brewster, "was extremely ingenious, and is well fitted to convey an idea of this class of deceptions;" we shall give a detailed description of it.

"The machinery, as constructed by M. Charles, is shown in Fig. 1, in perspective, and a plan of it in Fig. 2. The four upright posts, A, A, A, A, were united at top by a cross rail, B, B, and by two similar rails at bottom. Four bent wires, *a*, *a*, *a*, *a*, proceeded from the top of these posts, and terminated at *c*. A hollow ball, M, about a foot in diameter, was suspended from these wires by four slender ribands, *b*, *b*, *b*, *b*, and into the copper ball were fixed the extremities of four trumpets, T, T, T, T, with their mouths outwards.

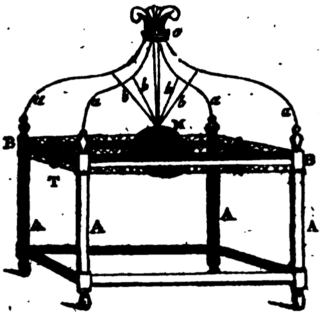


Fig. 1.

"The apparatus now described was all that was visible to the spectator; and though fixed in one spot, yet it had the appearance of a piece of separate machinery, which might have occupied any other part of the room. When one of the spectators was requested by the exhibiter to propose some question, he did it by speaking into one of the trumpets at T.

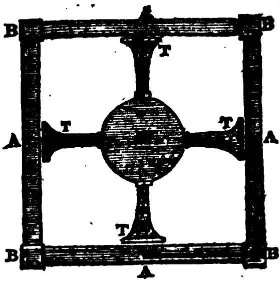


Fig. 2.

An appropriate answer was then returned from all the trumpets, and the sound issued with sufficient intensity to be heard by an ear applied to any of them, and yet it was so weak that it appeared to come from a person of very diminutive size. Hence the sound was supposed to come from an invisible girl, though the real speaker was a full grown woman. The invisible lady conversed in different languages, sang beautifully, and made the most lively and appropriate remarks on the persons in the room.

"The ball M and its trumpets communicated with nothing through which sound could be conveyed. The spectator satisfied himself by examination that the ribands, *b*, *b*, were real ribands, which concealed nothing, and which could convey no sound; and as he never conceived that the ordinary piece of framework A, B, could be of any other use than its apparent one of supporting the sphere M, and defending it from the spectators, he was left in utter amazement respecting the origin of the sound, and his surprise was increased by the difference between the sounds which were uttered and those of ordinary speech.

"Though the spectators were deceived by their own reasoning, yet the process of deception was a very simple one. In two of the horizontal railings, A, A, Fig. 2, opposite the trumpet mouths T, there was an opening communicating with a pipe or tube which went to the upright post B, and descending it, as shown at T A A, Fig. 3, went beneath the floor *f*, *f*, in the direction *p*, *p*, and entered the apartment N, where the invisible lady sat. On the side of the partition about *h*, there was a small hole, through which the lady saw what was going on in the exhibition room, and communications were no doubt made to her by signals from the person who attended the machine. When one of the spectators asked a question by speaking into one of the trumpets T, the sound was reflected from the mouth of the trumpet back to the opening at A, in the horizontal rail, Fig. 2, and was distinctly conveyed along the closed tube into the apartment N. In like manner the answer

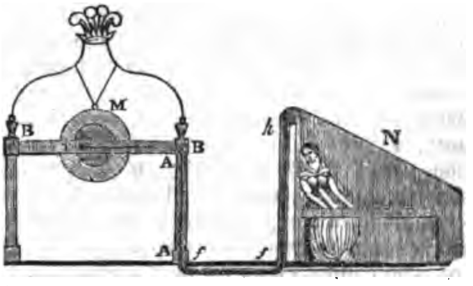


Fig. 3.

issued from the aperture A, and being reflected back to the ear of the spectator by the trumpet he heard the sounds with that change of character which they receive when transmitted through a tube, and then reflected to the ear.

"The surprise of the auditors was greatly increased by the circumstance, that an answer was returned to questions put in a whisper, and also by the conviction that nobody but a person in the middle of the audience could observe the circumstances to which the invisible figure frequently adverted.

This ingenious contrivance suggests to Dr. Brewster the following remarks on the subject, *the deceits of the sense of hearing*:—

"Although the performance of *speaking heads* were generally effected by the methods now described, yet there is reason to think that the ventriloquist sometimes presided at the exhibition, and deceived the audience by his extraordinary powers. There is no kind of deception more irresistible in its effects than that which arises from the uncertainty with which we judge of the direction and distance of sounds. Every person must have noticed how a sound in their own ears is often mistaken for some loud noise moderated by the distance from which it is supposed to come; and the sportsman must have frequently been surprised at the existence of musical sounds humming distantly in the wide heath, when it was only the wind sounding in the barrel of his gun. The great proportion of apparitions that haunt old castles and apartments associated with death, exist only in the sounds which accompany them. The imagination even of the boldest inmate of a place hallowed by superstition, will transfer some trifling sound near his own person to a direction and to a distance very different from the truth; and the sound which otherwise might have nothing peculiar, will derive another character from its new situation. Spurning the idea of a supernatural origin, he determines to unmask the spectre, and grapple with it in its den. All the inmates of the house are found to be asleep—even the beasts are in their lair—there is not a breath of wind to ruffle the lake that reflects through the casement the waning crescent of the night; and the massive walls in which he is enclosed, forbid the idea that he has been disturbed by the warping of panneling or the bending of partitions. His search is vain; and he remains master of his own secret, till he has another opportunity of investigation. The same sound again disturbs him, and, modified, probably, by his own position at the time, it may perhaps appear to come in a direction slightly different from the last. His searches are resumed, and he is again disappointed. If this incident should occur night after night, with the same result;—if the sound should appear to depend upon his own motions, or be any how associated with himself, with his present feelings, or with his past history, his personal courage will give way, a superstitious dread, at which he himself perhaps laughs, will seize his mind, and he will rather believe that the sounds have a supernatural origin, than that they could continue to issue from a spot where he knows there is no natural cause for their production.

"I have had occasion to have personal knowledge of a case much stronger than that which has now been put. A gentleman, devoid of all superstitious feelings, and living in a house free from any gloomy associations, heard night after night in his bedroom a singular noise, unlike any ordinary sound to which he was accustomed. He had slept in the same room for years without hearing it, and he attributed it at first to some change of circumstances in the roof or in the walls of the room; but after the strictest examination no cause could be found for it. It occurred only once in the night; it was heard almost every night, with few interruptions. It was over in an instant, and it never took place till after the gentleman had gone to bed. It was always distinctly heard by his companion, to whose time of going to bed it had no relation. It depended on the gentleman alone, and it followed him into another apartment with another bed, on the opposite side of the house. Accustomed to such investigations, he made the most diligent but fruitless search into its cause. The consideration that the sound had a special reference to him alone, operated upon his imagination, and he did not scruple to acknowledge that the mysterious sound always produced a superstitious feeling at the moment. Many months afterwards it was found that the sound arose from the partial opening of the door of a wardrobe which was within a few feet of the gentleman's head, and which had been taken into the other apartment. This wardrobe was almost always opened before he retired to bed, and the door being a little too tight, it gradually forced itself open with a sort of dull sound, resembling the note of a drum. As the door had only started half an inch out of its place, its change never attracted attention. The sound, indeed, seemed to come in a different direction, and from a greater distance.

"When sounds so mysterious in their origin are heard by persons disposed beforehand to a belief in the marvellous, their influence over the mind must be very powerful. An inquiry into their origin, if it is made at all, will be made more in the hope of confirming than of removing the original impression, and the unfortunate victim of his own fears will also be the willing dupe of his own judgment."

POETRY.

TO SENECA LAKE.—Percival.

On thy fair bosom, silver lake,
  The wild swan spreads his snowy sail,
And round his breast the ripples break,
  As down he bears before the gale.

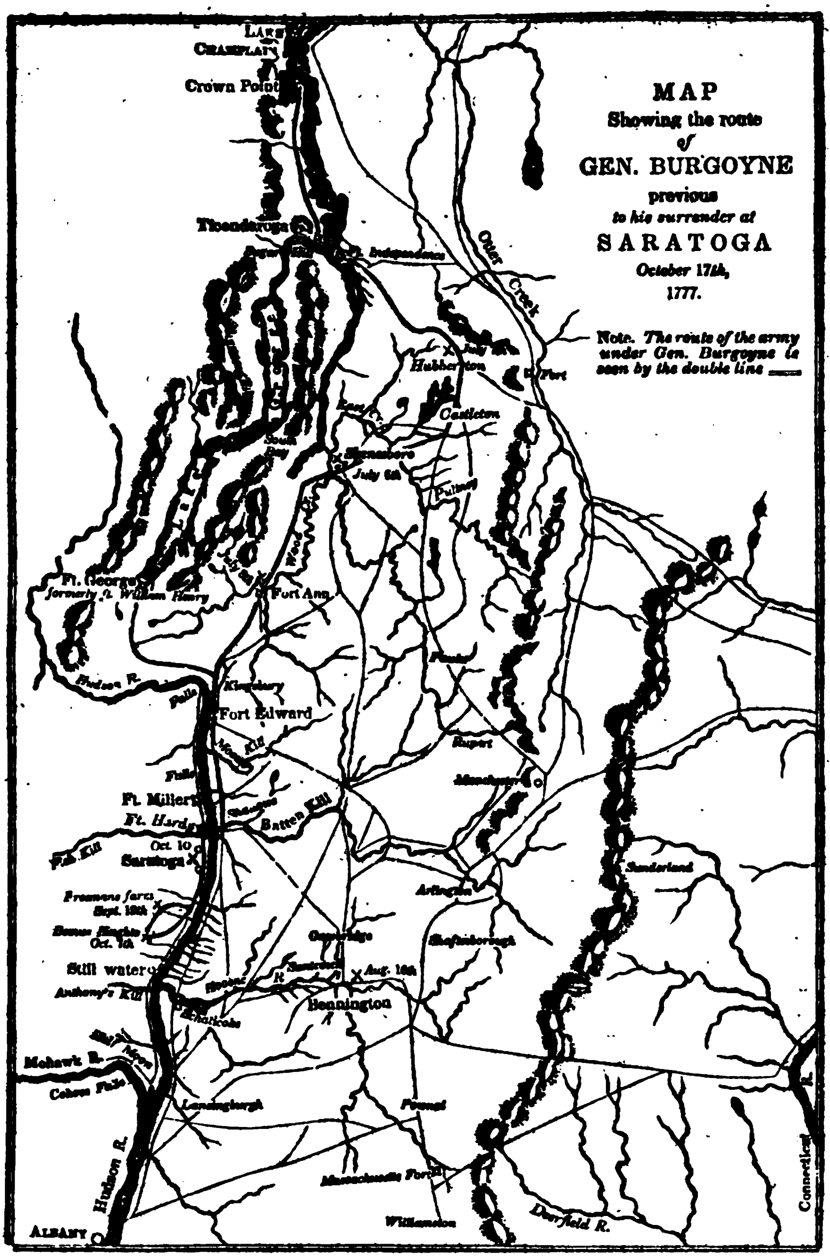
On thy fair bosom, waveless stream,
  The dipping paddle echoes far,
And flashes in the moonlight gleam,
  And bright reflects the polar star.

The waves along thy pebbly shore,
  As blows the north wind, heave their foam,
And curl around the dashing oar,
  As late the boatman hies him home.

How sweet, at set of sun, to view
  Thy golden mirror spreading wide,
And see the mist of mantling blue,
  Float round the distant mountain's side!

At midnight hour, as shines the moon,
  A sheet of silver spreads below,
And swift she cuts, at highest noon,
  Light clouds, like wreaths of purest snow.

On thy fair bosom, silver lake,
  O! I could ever sweep the oar,
When early birds at morning wake
  And evening tells us toil is o'er.



REVOLUTIONARY BATTLES ILLUSTRATED. No. 2.

CAPTURE OF BURGOYNE, AT SARATOGA.

We know of no series of events to be found in the history of our Revolution, more highly fraught with interest than those that were attendant upon the effort of Gen. Burgoyne to penetrate from the Canadas to the city of Albany. To conjoin the greater portion of the British army in the interiour of New York, by opening a way from New York city on one side, and from Canada on the other, while another portion was harassing the South, had for a long time been the favourite plan of the British ministry. They looked upon the victorious result of this enterprise as a final blow to the war.

General Burgoyne, an officer of undoubted ability, and possessed of an exact knowledge of the country, was appointed to conduct the operations of the northern army. He was a man of genius and spirit, and of fiery ambition, which led the English ministry to place so great confidence in him. Having arrived in Quebec with his commission in May, 1777, he immediately displayed great activity in making those preparations which were necessary to the success of an enterprise which was to decide the fate of America. The regular force placed at his disposal, consisting of British and German troops, amounted to upwards of seven thousand men, exclusive of a corps of artillery composed of about five hundred

To these was added a detachment of seven hundred rangers, under Colonel St. Leger, destined to make an incursion into the country of the Mohawks, and to seize Fort Stanwix. According to the plan, the principal army of Burgoyne was to be joined by two thousand Canadians, including hatchet-men, and other workmen whose services were necessary to render the ways practicable. A sufficient number of seamen had been assembled, for manning the transports. Besides the Canadians that were to be immediately attached to the army, many others were called upon to scour the woods in the frontiers, and to occupy the intermediate parts between the army, which advanced towards the Hudson, and that which remained for the protection of Canada: the latter amounted, including the highland emigrants, to upwards of three thousand men. They were furnished by the sanguine ministry with a liberal profusion of provisions, military stores, and other conveniences, amongst which was also comprehended a large quantity of uniforms, destined for the loyalists, who, it was not doubted, would after victory flock from all quarters to the royal camp. A great number of cruel and intractable savages were also added to their numbers, through the influence of Governour Carleton. Burgoyne was seconded by many able and excellent officers; among whom we may number Major-general Phillips, the brigadier-generals Frazer, Powel, Hamilton, and Specht, with the Brunswick major-general Baron Reidesel. The whole army shared in the ardour and hopes of its chiefs, and not a doubt was entertained of an approaching triumph, and the conquest of America.

The first movement of Burgoyne was to encamp near the little river Bouquet, on the western bank of Lake Champlain, a short distance north of Crown Point. Here he made addresses to the Indians to repress their ferocious propensities, and sent proclamations into the country to intimidate the people. He next made a short stop at Crown Point, and then proceeded to invest Ticonderoga. The right wing took the western bank of the lake, the left advanced upon the eastern, and the centre was embarked upon the lake itself. The American army, destined to oppose the progress of the royal troops, and to defend Ticonderoga, was altogether insufficient. General Schuyler, who commanded the American troops in this quarter, had been disappointed in procuring reinforcements, and his force did not amount to over five thousand men.

Ticonderoga was very strongly fortified on every side, and its defence was intrusted to General St. Clair, with a garrison of three thousand men; one third of them were militia, and all illy equipped. Although Gen. St. Clair used all his exertions to retard the operations of the advancing enemy, yet in a few days they succeeded in getting possession of Mount Hope and Mount Defiance, two very important positions, one of which commanded the American lines to a dangerous degree, and the other overlooked the entire fort. Ticonderoga being thus easily hemmed in on every side, a council of officers concluded to evacuate the fort. They accordingly withdrew on the night of the fifth of July. All was done in good order and profound silence, and the stores, artillery, and provisions were put on board two hundred batteaux and five armed galleys. They would probably have escaped unperceived by the British had not a house caught fire on Mount Independence, which betrayed by its light all that had taken place. The Americans were immediately pursued; and by the next afternoon their boats were overtaken and attacked at Skenesboro' falls. Two of the American galleys surrendered; three were blown up; and after setting fire to their works, mills, and batteaux, that portion of the army escaped up Wood Creek, to Fort Ann. The vanguard of the corps that set out by land, under St. Clair, had arrived at Castleton; the rear had rested at Hubbardston, when it was overtaken and attacked by General Frazer, on the morning of the seventh. An obstinate battle ensued, which at length, after Reidesel came up, resulted in dispersing the Americans, who left many of their soldiers, together with their brave commander Col. Francis, dead on the field. St. Clair after hearing this news, struck into the woods in an eastern direction.

The English generals next resolved to drive the Americans from Fort Ann. After a sanguinary combat they finally succeeded in this, by bringing suddenly to their aid the former savages. The Americans set the fort on fire, and retired to Fort Edward, where General Schuyler had posted himself. On the twelfth, St. Clair also arrived there, with the remains of the garrison of Ticonderoga. This it was expected would be the next point of attack. But Burgoyne was detained at Skenesboro' by want of provisions and stores. Gen. Schuyler took advantage of this delay, and neglected no means to procure recruits and to impede the progress of the enemy.

The British succeeded in obtaining possession of Fort George, and with much difficulty their army attained the banks of the Hudson near Fort Edward. The Americans moved down to Stillwater. Burgoyne soon experienced a great deprivation of provisions. While Col. St. Leger was investing Fort Stanwix, on the Mohawk, he detached five hundred soldiers and Indians to procure cattle at Bennington. To favour this expedition he moved his army down to the bank opposite Saratoga. A company of provincials had assembled from different quarters at Bennington, and were under the command of Col. Stark. They met the enemy on the borders of the town, and after an obstinate contest bravely repulsed him; the British, however, were again strengthened by a new detachment that again attacked the Americans; victory however declared for the latter, and the former lost seven hundred men and all their baggage.

But at this time, General Harkimer, who marched to the relief of Col. Ganzevort at Fort Stanwix, was ambushed by the savages, who dispersed his corps with most frightful carnage. The Indians grew disaffected, however, soon, and the British were obliged to raise the siege and retreat.

These successes of the Americans at Stanwix and Bennington, inspired them with new confidence. The harvests were ended, and the country people took arms in multitudes, and hastened to the camp elated with the expectation of vanquishing the vaunting regulars of the king. Gen. Gates, a man of great military renown, was appointed to the command of the army, which also gave a new spur to their alacrity. They were also excited by the inhuman cruelties of the savages under St. Leger and Burgoyne; the affecting death of Miss M'Crea, which was also fresh in their minds, exasperated them to the extreme. The savages deserted Burgoyne, and the Canadians were frightened to their homes by the sinister aspect of affairs. Gen. Lincoln, with a strong corps of New Hampshire and Connecticut militia, assisted by Colonels Brown and Johnston, with great secrecy and celerity obtained repossession of Forts Edward, Ann, and George, Mount Hope, and Mount Defiance.

Gen. Burgoyne having amassed about thirty days' provisions, resolved to pass the Hudson, engage the American army, and force a passage to Albany. Towards the middle of September, he crossed the river, and encamped on the heights and plains of Saratoga, Gates being then near Stillwater. Burgoyne had now to rely, almost entirely, on his German and British regular troops, and a battle was soon expected. This was reserved for the nineteenth of September, and the question was to be decided, whether the Americans could resist the English upon equal ground, in fair and regular battle.

Some small woods only separating the two armies, they were early on the nineteenth formed in the order of battle. The right wing of the British army rested upon the high grounds, and the left wing and artillery, under Phillips and Reidesel, kept along the road and meadows by the river side. Gates took the right of the American army, and gave the left to Arnold. Smart skirmishes immediately ensued between the foremost marksmen of either party, and the two soon met. General Frazer repulsed the Americans. Finding the right flank of the enemy's right wing so well defended, they left a sufficient guard to defend this passage, made a rapid movement to their right, and vigorously assailed the left flank of the same wing. Arnold exhibited upon this occasion all the impetuosity of his courage; he encouraged his men with voice and example. The action became extremely warm; the enemy fearing that Arnold, by cutting their line, would penetrate between their wings, as was manifestly his intention, hastened to reinforce the points attacked. General Frazer came up with the twenty-fourth regiment, some light infantry, and Breyman's riflemen; he would have drawn more troops from the right flank, but the heights on which it was posted, were of too great importance to be totally evacuated. Meanwhile, such was the valour and impetuosity of the Americans, that the English began to fall into confusion; but General Phillips soon appeared with fresh men and a part of the artillery: upon hearing the firing he had rapidly made his way through a very difficult wood to the scene of danger. He restored the action at the very moment it was about to be decided in favour of the Americans. The latter, however, renewed their attacks with such persevering energy, that night only parted the combatants.

After this battle, Burgoyne waited nearly a month to hear from General Clinton. At length he received intelligence, but it was of such a nature as only to increase his disappointments and render his situation more hopeless. Driven to extremity, he resolved to make another effort to force a passage to Albany by the enemy's left. In this he utterly failed, and his troops were driven back to their intrenchments, and pursued with eagerness and great loss even to their camp. The Americans had now acquired an opening on the right and rear of the British army, whose situation was therefore rendered very perilous. Burgoyne operated a change of ground. But Gen. Gates had taken the precaution, to station strong divisions on almost every side, to prevent the enemy's escape. Burgoyne retired to Saratoga, but so miserable was the condition of his army that it occupied nearly two days to effect this small movement of six miles. He left his hospital in the hands of the Americans. He now hoped to cross the river at Saratoga, and retreat to the lakes to save his army. But he soon found that Fort Edward, on the opposite bank, was too strongly manned to attempt to effect it. He then turned his attention to Fort George, in hopes of crossing there; but he soon learned that the Americans were strongly intrenched in that direction also. General Gates, with the main body of the army, thirsting for battle, was in his rear. In this state of affairs he relinquished all hopes of saving himself by his own efforts. His only refuge from despair was the faint hope of co-operation from the parts down the river; and he looked for the aid of Clinton with the most intense desire. His army was in a pitiable condition. Worn out, abandoned, half their number slaughtered, and amongst them the most distinguished officers; reduced in numbers from ten thousand to five thousand, and invested by an army of four times their own number, who refused to fight, from a knowledge of their helpless condition, and who, from the nature of the ground, could not be attacked. But Burgoyne's troops, even while the rifle and grape shot fell thickly around them in this forlorn state, retained their ordinary constancy, and while sinking under a hard necessity, showed themselves worthy of a better fate. They betrayed no want of temper, or of fortitude

The British army had but three days' provisions—no succour came—no hope remained. A capitulation was concluded upon. Gen. Gates, while he acted in the matter with moderation, also acted with decision. He left but one alternative for the British general—he must either sign the articles or prepare for battle. On this day, the seventeenth of October, the American army amounted to fifteen thousand men; the English to five thousand, seven hundred and ninety-one. The articles were signed, and they were principally these:—

The army should march out of camp with all the honours of war and its camp artillery, to a fixed place, where they were to deposite their arms and leave the artillery. To be allowed free embarkation and passage to Europe, from Boston, upon condition of their not serving again in America, during the present war. The army not to be separated, particularly the men from the officers. Roll-calling, and other duties of regularity to be permitted. The officers to be admitted on parole, and to wear their side arms. All private property to be retained, and the publick delivered upon honour. No baggage to be searched or molested All persons, of whatever country, appertaining to, and following the camp, to be fully comprehended in the terms of the capitulation, and the Canadians to be returned to their own country, liable to its provisions.

Gen Gates ordered his troops to retire within their lines, that they might not witness the shame of the English, when they piled their arms. Such was the fate of the British expedition upon the Hudson.

ESSAY ON THE EDUCATION OF FEMALE TEACHERS, FOR THE UNITED STATES.

BY CATHERINE E. BEECHER.

The topick proposed for consideration in this essay cannot properly be presented, without previously adverting to certain difficulties in regard to female education; and, in the same connexion, suggesting the most practicable methods of securing their remedy.

One of the first objects that need to be attempted in regard to female education, is to secure some method of rendering female institutions permanent in their existence, and efficient in perpetuating a regular and systematick course of education. This is secured for the other sex, by institutions so endowed that the death or removal of an individual does not hazard their existence or character. They continue year after year, and sometimes for ages, maintaining the same system of laws, government, and course of study. But in regard to female institutions, every thing is ephemeral; because, in most cases, every thing depends upon the character and enterprise of a single individual. A school may be at the height of prosperity one week, and the next week entirely extinct. Communities seem almost entirely dependant upon chance, both for the character and the perpetuity of schools. If good teachers stray into their bounds, they are fortunate; if poor ones, they have no remedy. Thus the character, the conduct and the continuance of those who are so extensively to mould the character of the future wives and mothers of this nation, are almost entirely removed from the control of those most deeply interested.

One method which tends to remedy this evil is, the investment of property in buildings, furniture, and apparatus devoted to this object, under the care of a suitable corporate body. It thus becomes the business of certain responsible men, that the property thus invested shall secure the object for which it has been bestowed. But this method alone will not avail, for though the probabilities are greater that endowed institutions will be well sustained, it is often found that they do fail in securing a systematick and perpetuated plan of education. There needs to be added a well devised plan of government and course of study, together with that division of labour existing in colleges, which secures several able instructers to the same institution, and in such a way that the removal of any one teacher does not interrupt the regular system of the institution.

That this can be accomplished in regard to female seminaries, as well as those for the other sex, is no longer problematical, for it has already been done; and what has been, can be done again. One female institution, at least, can be referred to, in which a regular system of government and instruction has been carried on for a course of years, until an adequate number of teachers and pupils has been fitted to perpetuate the system, so that as one teacher after another was called away, others were prepared to take their places; and thus the whole number of teachers, from the principal to the lowest monitor, has been repeatedly changed, and yet the same system and course of study have been preserved; while there is as fair a prospect of future perpetuity as is afforded by most of our colleges.

Another object to be aimed at in regard to female education is, a remedy for the desultory, irregular, and very superficial course of education now so common in all parts of our country. When young men are sent to obtain a good education, there is some standard for judging of their attainments; there are some data for determining what has been accomplished. But in regard to females, they are sent first to one school, and then to another; they attend a short time to one set of studies, and then to another; while every thing is desultory, unsystematick, and superficial. Their course of study is varied to suit the notions of parents, or the whims of children, or the convenience of teachers; and if a young lady secures a regular and thorough course of education, it is owing either to the uncommonly good sense and efforts of parents, or to the rare occurrence of finding teachers sufficiently stationary and persevering to effect it.

The remedy for this evil (in addition to what is suggested in previous remarks) is to be sought in co-operating efforts among the leading female schools in the country, to establish a uniform course of education, adapted to the character and circumstances of females, to correspond with what is done in colleges for young gentlemen. The propriety of giving titles of honour to distinguished females may well be questioned. It certainly is in very bad taste, and would provoke needless ridicule and painful notoriety. But if leading female institutions combine to establish a regular course of study, which is appropriate and complete, it will prove an honour and advantage to young ladies to have it known that their education is thus secured; and it will also prove an advantage to the schools that thus gain the reputation of sending out uniformly well educated pupils. Other schools will gradually adopt the same plan; and thus the evils alluded to will, to a great extent, be remedied. These measures will have the same effect on female education, as medical and theological schools have upon those professions. They tend to elevate and purify, although they cannot succeed in banishing all stupidity and empiricism.

Another object to be aimed at in regard to female education is, to introduce into schools such a course of intellectual and moral discipline, and such attention to mental and personal habits, as shall have a decided influence in fitting a woman for her *peculiar* duties. What is the most important and peculiar duty of the female sex? It is the physical, intellectual, and moral education of children. It is the care of the health, and the formation of the character, of the future citizen of this great nation.

Woman, whatever are her relations in life, is necessarily the guardian of the nursery, the companion of childhood, and the constant model of imitation It is her hand that first stamps impressions on the immortal spirit, that must remain for ever. And what demands such discretion, such energy, such patience, such tenderness, love, and wisdom, such perspicacity to discern, such versatility to modify, such efficiency to execute, such firmness to persevere, as the government and education of all the various characters and tempers that meet in the nursery and school-room? Woman also is the presiding genius who must regulate all those thousand minutiæ of domestick business, that demand habits of industry, order, neatness, punctuality, and constant care. And it is for such varied duties that woman is to be trained. For this her warm sympathies, her lively imagination, her ready invention, her quick perceptions, all need to be cherished and improved; while at the same time those more foreign habits, of patient attention, calm judgment, steady efficiency, and habitual self-control, must be induced and sustained.

Is a weak, undisciplined, unregulated mind, fitted to encounter the responsibility, weariness and watching of the nursery; to bear the incessant care and perplexity of governing young children; to accommodate with kindness and patience to the peculiarities and frailties of a husband; to control the indolence, waywardness, and neglect of servants; and to regulate all the variety of domestick cares? The superficial accomplishments of former periods were of little avail to fit a woman for such arduous duties; and for this reason it is, that as society has advanced in all other improvements, the course of female education has been gradually changing, and some portion of that mental discipline, once exclusively reserved for the other sex, is beginning to exert its invigorating influence upon the female character. At the same time the taste of the age is altered; and, instead of the fainting, weeping, vapid, pretty plaything, once the model of female loveliness, those qualities of the head and heart that best qualify a woman for her duties, are demanded and admired.

None will deny the importance of having females properly fitted for their peculiar duties; and yet few are aware how much influence a teacher may exert in accomplishing this object. School is generally considered as a place where children are sent, not to form their habits, opinions, and character, but simply to learn from books. And yet, whatever may be the opinion of teachers and parents, children do, to a very great extent, form their character under influences bearing upon them at school. They are proverbially creatures of imitation, and accessible to powerful influences. Six hours every day are spent with teachers, whom they usually love and respect, and whose sentiments and opinions, in one way or another, they constantly discover. They are at the same time associated with companions of all varieties of temper, character, and habit. Is it possible that this can exist without involving constant and powerful influences, either good or bad? The simple fact that a teacher succeeds in making a child habitually accurate and thorough in all the lessons of school, may induce mental habits that will have a controlling influence through life. If the government of schools be so administered as to induce habits of cheerful and implicit obedience, if punctuality, neatness, and order in all school employments are preserved for a course of years, it must have some influence in forming useful habits. On the contrary, if a child is tolerated in disobedience and neglect, if school duties are performed in a careless, irregular, and deficient manner, pernicious habits may be formed that will operate disastrously through life. It is true that mismanagement and indulgence at home may counteract all the good influences of school; and the faithful discharge of parental duty may counteract, to some extent, the bad influences of school: but this does not lessen the force of these considerations.

Nor is the course of study and mental discipline of inferiour consequence. The mere committing to memory of the facts contained in books, is but a small portion of education. Certain portions of time should be devoted to fitting a woman for her practical duties: such, for example, as needlework. Other pursuits are designed for the cultivation of certain mental faculties, such as *attention*, *perseverance*, and *accuracy*. This, for example, is the influence of the study of the mathematicks; while the conversation and efforts of a teacher, directed to this end, may induce habits of investigation and correct reasoning, not to be secured by any other method Other pursuits are designed to cultivate the taste and imagination: such as rhetorick, poetry, and other branches of polite literature. Some studies are fitted to form correct moral principles, and strengthen religious obligation: such as mental and moral philosophy, the study of the evidences of Christianity, the study of the Bible, and of collateral subjects. Other studies are designed to store the mind with useful knowledge; such, for example, as geography, history, and the natural sciences. The proper selection and due proportion of these various pursuits, will have a decided influence in forming the mental habits and general character of the pupils.

Another important object in regard to female education is, the provision of suitable facilities for instruction, such as are deemed indispensable for the other sex, particularly apparatus and libraries.

While the branches now included in a course of education for females of the higher circles have increased, till nearly as much is attempted, as, were it properly taught, is demanded of young men at college, little has been done to secure a corresponding change, in regard to the necessary facilities to aid in instruction.

To teach young men properly in chymistry, natural philosophy, and other branches of science, it is deemed necessary to furnish a teacher for each separate branch, who must be prepared by a long previous course of study who shall devote his exclusive attention to it, and who shall be furnished with apparatus at the expense of thousands of dollars; while, to aid both teachers and pupils, extensive libraries must be provided, and all at publick expense.

But when the same branches are to be taught to females, one teacher is considered enough to teach a dozen such sciences, and that too without any apparatus, without any qualifying process, and without any library.

If females are to have the same branches included in their education as the other sex, ought there not to be a corresponding change to provide the means for having them properly taught; or are our sex to be complimented with the intimation that a single teacher, without preparatory education, without apparatus, and without libraries, can teach young ladies what it requires half a dozen teachers, fitted by a long course of study, and furnished with every facility of books and apparatus to teach young gentlemen? We certainly are not ambitious of such compliments to the intellectual superiority of our sex It is true such extensive publick endowments are not needed for females as for the other sex, because their progress in many of the sciences never needs to be so extensive: but, if these branches are to constitute a part of female education, is not *something* of this kind demanded from publick munificence, that all be not left to the private purse of the teacher, who must furnish it from slender earnings, or remain unsupplied?

But the most important deficiency, and one which is equally felt by both sexes, is the want of a system of moral and religious education at school, which shall have a *decided influence* in forming the character, and regulating the principles, and conduct, of future life.

When it is asserted that it is of more consequence that women be educated to be virtuous, useful, and pious, than that they become learned and accomplished, every one assents to the truth of the position. When it is said that it is the most important and most difficult duty of parents and teachers, to form the moral character, the principles and habits of children, no one will dissent. All allow it to be a labour demanding great watchfulness, great wisdom, and constant perseverance and care. For what comfort would parents find in the assurance, that their children are intelligent, learned, and accomplished, if all is to be perverted by indolence, vice, and irreligion? And what is the benefit to society, in increasing the power of intellect and learning, if they only add to the evils of contaminating example and ruinous vice? The necessity of *virtuous* intelligence in the mass of the community is peculiarly felt in a form of government like ours, where the people are not held in restraint by physical force, as in despotick governments, but where, if they do not voluntarily submit to the restraints of virtue and religion, they must inevitably run loose to wild misrule, anarchy, and crime.

For a nation to be virtuous and religious, the females of that nation must be deeply imbued with these principles: for just as the wives and mothers sink or rise in the scale of virtue, intelligence, and piety, the husbands and the sons will rise or fall. These positions scarce any intelligent persons will deny: so that it may be set down as one of the current truisms of society, that the formation of the moral and religious principles, and habits, is the most important part of education, even in reference to this life alone. To this is added the profession of all who reverence Christianity, that the interests of an immortal state of being are equally suspended on the same results.

But while this is the *verbal* opinion of society, what is the *practical* opinion, as exhibited in systems of education, particularly in schools?

We find in all communities a body of persons set apart for the express purpose of communicating knowledge, and cultivating the intellect of childhood and youth. At the same time we find both parents and teachers uniting in the feeling, that this is all that is required, and that it is not expected that they should attempt any thing more. As the care of the intellect is the business given to teachers, we find that *some* success always attend these efforts. However dull the child or incompetent the teacher, at the end of each year it will be found, that every child has learned something, and that the memory at least, if no other faculty, is to some extent cultivated. Parents and school visiters find, that the money employed is not spent entirely in vain, but that it does, to some extent, secure the object for which it was expended. But if parents or school committees should visit schools with such inquiries as these:—"How many pupils have improved in the government of their temper the past year? How many are more docile and obedient? How many are more strict in regard to veracity, honour, and honesty? How many have improved in a spirit of magnanimity, self-command, and forgiveness of injuries? How many have learned to govern their tongues by the law of charity, so as not to speak evil of others, or to propagate scandal? How many are more regardful of the duties owed to parents, and more kind and obliging to companions? How many are more mindful of their highest obligations to God? And how many, under the influence of fear and love to him, are practising more and more the self-denying duties of benevolence to all?"

Would not such questions, in most of our schools, awaken surprise, and be deemed irrelevant and almost impertinent, even if addressed to those whose express business it is to educate children?

Why is there this strange inconsistency between the avowed opinions and the practice of society?

Not because the moral and religious education of children is a matter with which teachers cannot profitably employ themselves. None will deny that teachers, possessing the requisite character and experience, employed with the express understanding that they are held responsible for the moral as well as the intellectual education of their pupils, and allowed sufficient time and opportunity for such duties, could exert a constant and powerful influence over young and plastick minds, placed for six hours each day under their entire control. And what peculiar advantages teachers enjoy, who, unbiassed by the partialities of parental fondness, can observe their charge when thrown into collision with all the various characters that meet in the school-room and play ground, where often are developed peculiarities of character and temper, that escape parental notice and care.

Nor does this strange inconsistency exist because teachers cannot give instruction in all the relative moral and religious duties, nor because they cannot become intimately acquainted with the peculiar temperament, habits, and deficiencies of every child, and point out its dangers, and set before it the appropriate motives to excite to virtuous effort.

Nor is it because experience shows that it does no good to convince children of their faults, and to invite them to improvement. Nor is it because teachers cannot, with propriety and success, bring to bear upon the minds of children, the powerful motives of religious obligation; teaching them the claims of the Bible, the evidences of its authority, the proper mode of gaining a correct and independent knowledge of its contents: while they daily appeal to it as the standard of moral rectitude, and employ its solemn sanctions to sustain its precepts.—*Continued.*

TO ONE BEREFT.—Mellen.

The heart that has not known the hour
  When grief could bid it bow,
Or *seen* that looks and words have power
  To wring the brightest brow,
'Twere vain to torture with a song
  So sorrowful as mine;
Leave such to pant amidst the throng
  That crowd its gilded shrine.

But ye that suffer; who have felt
  The destiny of earth,
That death, with shadowy hand hath dealt
  Rebuke amidst your mirth:
To you this tribute of a word,
  When other sounds have fled,
Will come like loved tones, faintly heard
  The memory of the dead.

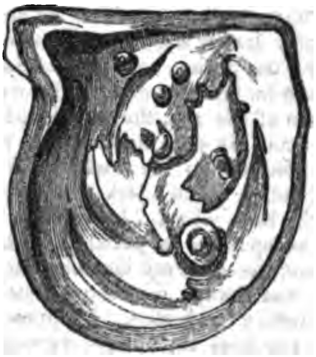
PEARL-FISHERY IN CEYLON.

The country round Aripo, on the northwestern coast of the island of Ceylon, is flat, sandy, and barren, presenting nothing to the eye, but low brushwood, chiefly of thorns and prickly pears (amongst which is the plant that nourishes the Cochineal[*]), and here and there some straggling villages with a few cocoanut-trees. But Condaachty, three miles distant, where, in general, nothing is to be seen but a few miserable huts, and a sandy desert, becomes, during the period of the pearl-fishery, a populous town, several streets of which extend upwards of a mile in length (though as the houses are only intended as a shelter from the sun and rain, they are very rudely constructed), and the scene, altogether, resembles a crowded fair on the grandest scale. The people most active in erecting huts and speculating in the various branches of merchandise, are Mohammedans, Cingalese (natives of Ceylon), and Hindoos from the opposite coast of the continent of India. Apparently, however, from their natural timidity, none of the Cingalese are divers, and scarcely any of them engage in the other active parts of the fishery: they merely resort hither for the purpose of supplying the markets.

About the end of October, in the year preceding a pearl-fishery, when a short interval of fine weather prevails, an examination of the banks takes place. A certain number of boats, under an English superintendent, repair in a body to each bank, and having, by frequent diving, ascertained its situation, they take from one to two thousand oysters as a specimen. The shells are opened, and if the pearls collected from a thousand oysters be worth three pounds sterling, a good fishery may be expected. The "banks" or beds of oysters, are scattered over a space in the gulf of Manaar, extending thirty miles from north to south, and twenty-four from east to west. There are fourteen beds (not all, however, productive), of which the largest is ten miles long, and two broad. The depth of water is from three to fifteen fathoms.

Meleagrina Margaritifera.

The pearl-oysters in these banks are all of one species,[†] and of the same form: in shape not very unlike our common English oyster,—but considerably larger, being from eight to ten inches in circumference. The body of the animal is white, fleshy, and glutinous: the inside of the shell (the real "mother of pearl,") is even brighter and more beautiful than the pearl itself: the outside smooth and dark-coloured. The pearls are most commonly contained in the thickest and most fleshy part of the oyster. A single oyster will frequently contain several pearls, and one is on record, as having produced one hundred and fifty. The pearl itself is probably the result of some accidental deposite or extravasation of the liquor secreted by the animal, in the gradual enlargement of its shell,—very small in the first instance, but increased by successive layers of pearly matter.



Inner view, showing the Pearls.

Sometimes the English government of Ceylon fishes the banks entirely at its own risk; sometimes the boats are let to many speculators; but, most frequently, the right of fishing is sold to one individual, who sub-lets boats to others. The fishery for the season of the year 1804, was let by government to an individual for no less a sum than £120,000.

At the beginning of March, the fishery commenced, and upwards of two hundred and fifty boats were employed in the fishery alone. These, with their crews and divers, and completely equipped with every thing necessary to conduct the business of the fishing, come from different parts of the coast of Coromandel. After going through various ablutions and incantations, and other superstitious ceremonies, the occupants of these boats embark at midnight, guided by pilots, and as soon as they reach the banks, they cast anchor, and wait the dawn of day.

At about seven in the morning, when the rays of the sun begin to emit some degree of warmth, the diving commences. A kind of open scaffolding formed of oars and other pieces of wood, is projected from each side of the boat, and from it the diving-tackle is suspended, with three stones on one side, and two on the other. The diving-stone hangs from an oar by a light rope and slipknot, and descends about five feet into the water. It is a stone of fifty-six pounds weight, of a sugarloaf shape. The rope passes through a hole in the top of the stone, about which a strong loop is formed, resembling a stirrup-iron, to receive the foot of the diver. The diver wears no clothes, except a slip of calico round his loins,—swimming in the water, he takes hold of the rope, and puts one foot into the loop or stirrup, on the top of the stone. He remains in this upright position for a little while, supporting himself by the motion of one arm. Then a basket, formed of a wooden hoop and network, suspended by a rope, is thrown into the water to him, and in it he places his other foot. Both the ropes of the stone and the basket he holds for a little while in one hand. When he feels himself properly prepared and ready to go down, he grasps his nostrils with one hand, to prevent the water from rushing in; with the other gives a sudden pull to the running-knot suspending the stone, and instantly descends: the remainder of the rope fixed to the basket is thrown into the water after him, at the same moment: the rope attached to the stone is in such a position as to follow him of itself. As soon as he touches the bottom, he disentangles his foot from the stone, which is immediately drawn up, and suspended again to the projecting oar in the same manner as before, to be in readiness for the next diver. The diver, arrived at the bottom of the sea, throws himself as much as possible upon his face, and collects every thing he can get hold of into the basket. When he is ready to ascend, he gives a jerk to the rope, and the persons in the boat, who hold the other end of it, haul it up as speedily as possible. The diver, at the same time, free of every incumbrance, warps up by the rope, and always gets above water a considerable time before the basket. He presently comes up at a distance from the boat, and swims about, or takes hold of an oar or a rope, until his turn comes to descend again; but he seldom comes into the boat, until the labour of the day is over. When a young diver is training to the business, he descends in the arms of a man completely experienced in the art, who takes great care of him, and shows him the manner of proceeding, and the pupil at first brings up in his hand a single oyster, a stone, or a little sand, merely to show that he has reached the bottom. The length of time during which the divers remain under water, is rarely much more than a minute and a half; yet in this short period, in a ground richly clothed with oysters, an expert diver will often put as many as one hundred and fifty into his basket. There are two divers attached to each stone, so that they go down alternately: the one rests and refreshes, while the other plunges. The men, after diving, generally find a small quantity of blood issue from their nose and ears, which they consider as a favourable symptom, and perform the operation with greater comfort after the bleeding has commenced. They seem to enjoy the labour as a pleasant pastime, and never murmur or complain, unless when the banks contain a scarcity of oysters, though their labours are continued for six hours.

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[*] The insect from which our most beautiful scarlet dies are prepared.

[†] The *Meleagrina Margaritifera* of Lamarck.

When the day is sufficiently advanced, the head pilot maks a signal, and the fleet set sail for the shore. All descriptions of people hasten to the water's edge to welcome their return, and the crowd, stir, and noise, are then immense. Every boat comes to its own station, and the oysters are carried into certain paved enclosures on the seashore, where they are allowed to remain in heaps (of course, well guarded) for ten days, that time being necessary to render them putrid. When the oysters are sufficiently decayed, they are thrown into a large vessel filled with salt water, and left there for twelve hours to soften their putrid substance. The oysters are then taken up, one by one, the shells broken from one another, and washed in the water. Those shells which have pearls adhering to them are thrown on one side, and afterwards handed to clippers, whose business it is to disengage the pearls from the shells, with pincers.

When all the shells are thrown out, the slimy substance of the oysters remains, mixed with sand and broken fragments of shells, at the bottom of the vessel. The dirty water is lifted out in buckets, and poured into a sack made like a gelly-bag, so that no pearls can be lost. Fresh water being then added from time to time, and the whole substance in the vessel continually agitated, the sand and pearls together are by degrees allowed to sink to the bottom.

As soon as the sand is dry, it is sifted; the large pearls, being conspicuous, are easily gathered; but the separating the small and diminutive ("seed pearls," as they are called) is a work of considerable labour When once separated from the sand, washed with salt water, dried, and rendered perfectly clean, they are sorted into classes, according to their sizes, by being passed through sieves. After this, a hole is drilled through each pearl; they are arranged on strings, and are then fit for the market.

Pearls have been considered as valuable ornaments from the earliest times: they are often mentioned in the book of Job (xxviii. 18), and are often alluded to by the classical writers. There have been various attempts made to imitate them successfully, one of the most singular of which—known to have been practised early in the Christian era, on the banks of the Red sea,—is still carried on in China. A hole is bored in the shell of the pearl-oyster, a piece of iron-wire inserted, and the oyster restored to its place: the animal, wounded by the point of the wire, deposites a coat of pearly matter round it: this gradually hardens, successive layers are added, till a pearl of the requisite size is formed, and the shell is once more brought to land.

False pearls are made of hollow glass globules, the inside of which is covered with a liquid, called pearl-essence, and then filled with white wax. This liquid is composed of the silver-coloured particles, which adhere to the scales of the Bleak (Ablette), and was first applied to this purpose early in the last century by a Frenchman of the name of Jacquin.

In the year 1761, Linnæus discovered the art by which the muscles which are found in many of our rivers might be made to produce pearls: but we believe it has never been made publick. The muscles found in the river Conway, in Wales, and in some of the rivers of Scotland, have not unfrequently produced large and fine-coloured pearls.

Cordiner's History of Ceylon.

From the Western Monthly Magazine.

POPULAR EDUCATION.

Extract from an article on the Transactions of the Fourth Annual Meeting of the Western Literary Institute, and College of Professional Teachers, held in Cincinnati, October, 1834.

The plan for creating a publick sentiment in favour of education, by means of popular assemblies, seems to be the only one which promises success. There is no other way in which the attention of the people can, with equal facility, be attracted to the subject, or their sympathies enlisted in the great and holy cause of popular instruction. Our legislatures will not do much on the subject. They will pass any law that one of their committees may report, for the regulation of common schools; but they cannot be prevailed upon to devote to the details of this matter that severe investigation which would enable them to act upon it with intelligence and vigour. The truth is, that such is the value of a seat in the legislature, and so great the difficulty of retaining it, that members have enough to do to keep their places, without meddling in such small matters as popular education. They have important party questions before them, which cannot be neglected, inasmuch as the personal interests of themselves and their friends are directly involved in the discussion; and they cannot be expected to prefer to these, the claims of the children, who have no votes, nor any means of resenting the injury done them in withholding from them the means of instruction.

"But," says some popular gentleman, who *loves the people*, "we have schools in abundance, and laws to regulate them—what more do you want?" We reply, that we require *education*—we desire to see *knowledge*, accurate, useful knowledge, disseminated among the people, and rendered accessible to every human being within our borders. A mere *school*, in which a child is taught to read badly, and write worse, and in which he receives little instruction in any art or science, which may be made practically useful to him, in the business of life, is perhaps not worth what it costs—we doubt whether those who learn to read and write *only*, derive any benefit from these acquisitions, and whether entire want of instruction, is not better than such a smattering.

If we are asked what our legislatures can do for education, more than they have done, we reply, that there is no subject upon which legislation could be extended more widely, or exerted more beneficially. The man who, having a seat in such a body, would make this great question his chief object, devoting to it the same degree of attention which some members devote to the diurnal changes in the political atmosphere, might become as great a benefactor to his country as Fulton, and earn a fame which would be as lasting as the republick. It is not enough for the legislature to pass laws allowing the people to tax themselves, for the establishment of schools. They should act on the subject *directly*—they should give dignity and interest to the cause, by making it a prominent subject of discussion—they should aid in the diffusion of literature and science, and should elevate and give efficiency to the office of teacher. A few thousand dollars given annually to our colleges, to increase their libraries, would invigorate the usefulness of these institutions, and awaken publick interest in their favour, to an extent that would hardly be anticipated by those who have not reflected on that matter. What would it be to the state of Ohio, or to Kentucky, to give ten or twenty thousand dollars annually to her colleges to be expended in accumulating valuable libraries? Yet with this trifling assistance these institutions would rise in importance, would allure students from a distance, would command the talents of the most highly gifted gentlemen as professors, and would exert a salutary influence throughout all the ramifications of the widely-extended scheme of popular instruction.

Colleges derive their value from concentrating a great amount of knowledge within a small space, and rendering it accessible to the student. They place the student in a focus, into which the rays of truth are collected, and brought to bear on him with intense power; they accumulate and hoard up the scattered fragments of science and literature, for the use of those who choose to engage in the pursuit of learning. These effects are produced but in a small degree, by gathering together a few professors in different branches, who can only bring with them, and throw into the publick stock, the meager stores that memory has treasured up—extensive and valuable libraries alone can afford the desired facilities for the acquisition of a solid and complete education. Without these a college affords few advantages which may not be derived from private instruction.

There is another improvement which must be effected either by law or by publick sentiment, before education will rise to its proper standard of excellence. The teacher must be paid. He must be valued at what he is worth. His services must be so estimated as to bear a due proportion to the labours of other men. If the school teacher be intrinsically worth to his employers no more than the day-labourer, and if no greater amount of talent and acquirement is demanded for the duties of the one than for those of the other, let them be paid alike; and let those who aspire to a more elevated standing, or who covet so much of the goods of this world as may be requisite to surround their firesides with the comforts and enjoyments of life, betake themselves to merchandise, or husbandry, or physick, or law—let them plough the ocean, or pursue the mechanick arts—let them do any thing but flog bad boys for a wretched living.

The efforts of the friends of education have, in this respect, been misdirected. The whole tendency of their measures, for the last few years, has been to disseminate knowledge by rendering it cheap, when the endeavour should have been to render learning desirable by making it the road to wealth and honour, and giving solid advantages to its possessor. The people should be enlightened, but learning should not by the same process be degraded. The teacher should be made useful, but not by depreciating his services, and lowering the dignity of his office.

The highest exertions of the human mind cannot be purchased in any department of business, without an equivalent. The man who is conscious of the possession of talents, or ingenuity, throws himself into that employment, in which, by the exertion of these qualities, he may reap wealth or honour. The merchant, the lawyer, the mechanick, labour with energy, cheerfulness, and zeal, devoting all the powers of their minds to their respective pursuits, because the comforts of competency, and the dignity of wealth, shine brightly in the distant perspective; but no man can thus toil, whose daily earnings barely supply his diurnal wants, and who is not cheered by the hope of wealth, or the anticipation of triumph. No man who has talent, spirit, or prudence, is content with a bare subsistence; a mere competency will never kindle the ambition of genius, or even satisfy the just desires of a well-regulated mind. The pay of teachers should be so regulated as to afford present comfort, and hold out the rewards of future wealth and promotion.

To accomplish the objects which we have suggested as desirable, we shall recommend the following changes:—

1. Persons should be educated specially for the office of instructer, and receive diplomas which should attest their capability. For this purpose, departments should be added to our colleges—perhaps a single additional professorship would be sufficient—in which young men should be trained to the business of teaching. None but graduates should be admitted into this school; nor should the ordinary acquisitions of the college entitle him to its diploma; on the contrary, one of his duties should be a thorough review of his whole preparatory and collegiate courses, for the purposes of correcting errours, maturing and digesting his attainments, connecting and arranging his series of studies into system, and giving accuracy and volume to his whole store of knowledge. He should, in connexion with these exercises, or subsequently if most advisable, be taught the art of teaching, the philosophy of the young mind, the best modes of inculcating knowledge, the most approved methods of discipline, and the history of the art of teaching, from the earliest times, including a thorough knowledge of existing systems of instruction throughout the world. He should be taught to govern his own temper, to regulate his manners, and to know the importance of his example; nor should a diploma be granted to any candidate whose temper was bad, or morals doubtful. They should be made practically expert in teaching, by being employed, regularly or occasionally, as tutors in the college.

2. The trustees and visiters of the publick schools, should be required, in all cases, to give the preference to persons thus educated, in the selection of their teachers; so that, in due time, this class of trained instructers would take the place of all others.

3. Having provided the means for educating teachers, and elevating this department of mental exertion to the rank of a liberal profession, it is necessary that inducements should be offered which shall cause it to be embraced by gentlemen of talents. For the purpose of ascertaining how this may be best effected, we must look at other branches of employment, and discover what are the usual stimulants to energetick and honourable exertion. We find few men who are capable of high effort, or susceptible of a generous moral impulse, toiling for a mere subsistence—and toiling thus from choice; for we must not take into this account the involuntary drudgery of the unfortunate, who are compelled by circumstances to work or starve. Those who labour cheerfully and successfully, have always some high motive, and some well-grounded expectation of ultimate reward. These incentives are power, office, wealth, or at all events, present competency, with the additional capacity to make provision for our offspring. Offer inducements of similar efficacy to the instructers of youth, and a portion of that talent which now crowds the medical profession, or revels in "the glorious uncertainty of the law," will be thrown into the college and the school-room. Let the rewards of the teacher accumulate with his years and experience, and permit him to see, as he looks forward through the long vista of time, an old age of wealth and dignity, and the first step will have been taken in the desired reformation.

To effect this object, the salaries of presidents of colleges should be raised to a point which would make this office desirable to any gentleman, however great his talents. They should have five or six thousand dollars a year, and be placed on an equality with the highest officers of government. Professors should have two, three, or four thousand dollars, as the case might be—but tutors should receive less in proportion, so that although they should be competently supported, they should not be so well paid as to destroy their desire for promotion. The same kind of graduation should take place in academies and common schools. The only difficulty would be to arrange at first the scale of proportion, but when this should be agreed upon, there would be a gradual line of promotion from the teacher of the alphabet, up to the president of a university.

That this plan would effect a complete and most salutary improvement in education, we cannot doubt There are in the United States about *sixty* colleges; but as all these are not of the first class, suppose that in *ten* of the wealthiest, the presidents received salaries of six thousand dollars—that in twenty others they received five thousand dollars—and in the remainder four thousand dollars. Suppose there were in the whole, three hundred professorships, worth from two to four thousand dollars each. There would then be three hundred and fifty offices sufficiently well endowed, to render their attainment worthy of the perseverance of a long and arduous pursuit. The office of president of a college would be sought with the same enterprise, patience, and singleness of purpose, which now elevate men to high civil stations, or place them in the foremost ranks of science. The young teacher of the common school would toil as cheerfully, and improve his talents with as much energy, as a junior member of the bar, supported under all his toils and vexations by the cheering hope that he was qualifying himself for an elevated station; and he would thus acquire habits of industry, regularity, and self-control, which would not forsake him when raised to a more prosperous fortune.

Perhaps we shall be told, that this plan is impracticable, on account of the immense sum which would be required to sustain it. But what nation ever became great, that was daunted by the magnitude of a scheme, which led directly to the promotion of her grandeur? Had Napoleon hesitated to count the cost, he would never have swayed the destinies of continental Europe. Had any projector in the reign of Henry VIII. proposed that England should increase her navy until her ships should command every sea, and her colonies be planted over the whole globe, so that the sun should not set upon the dominions of her king, it might well have been asked, "Who shall furnish the treasure for so vast an undertaking?" Great designs have within themselves inherent resources for their own accomplishment. They create wealth by multiplying the fields for enterprise, and developing opportunities for the exertion of genius, invention, and industry. As a body at rest is set in motion with difficulty, their beginnings are costly and laborious; but as they roll on they acquire momentum, and are carried forward with a decreased exertion of impulsive power. It is not for a great nation like ours to speak of expense, in reference to a design which tends directly to the elevation of the national character, the cultivation of its intellect, and the improvement of its morals—while its borders are overflowing with plenty, its soil teeming with abundance, its shores whitened with the sails of commerce, its arts triumphant, and its population strong in the energy of freedom.

Nor should we be alarmed at the aggregate of this expenditure, when we recollect the numerous resources from which it is to be drawn. Some of our colleges are endowed by the states, and all of them should receive occasional assistance from that source: the various religious sects contribute to their favourite institutions; and wealthy individuals have given liberally towards their support. Thus divided, the accumulation of a few millions, in aid of so beneficent an object, would neither be hopeless nor even difficult of accomplishment. Let the patrons of one institution set the example. Let them extend its buildings, enlarge its library, and increase the salaries of its faculty, and its superiority would soon induce others to embrace a similar policy. There is no way in which the surplus wealth devoted to benevolence, could be made so widely beneficial, as in the increasing of the endowments of our colleges, and in building up a system for the education of teachers.

4. The only other suggestion we shall now make, has reference to an increased employment of females in primary schools. There are many reasons why the early instruction of boys as well as girls, should be intrusted entirely to females. They are better teachers of children than men. They have more patience, more fidelity, more perseverance, and better temper. They are more familiar with the nature, wants, whims, and habits of children, have more kindness in conciliating their affection, and more ingenuity in swaying their waywardness. Providence, in placing the child at first upon the maternal bosom, intended that its first years should be intrusted to her care, and has endowed woman with a peculiar capacity for the discharge of the sacred office of teacher.

By this arrangement, a very numerous class of well-educated, but indigent persons, for whom it is difficult to find suitable employment, and whose unprotected situation appeals most forcibly to the sympathies of the benevolent, would be placed in independent circumstances, and rendered efficiently useful to the publick. They would not only make better teachers than men, but would be undergoing a process of self-improvement, and acquiring habits of industry, self-reliance, and discipline, which would make them better wives and mothers, whenever it should be their happy fate to exchange the government of the school for that of the household.

The office of the male teacher would be elevated, and made far less irksome, by the absence of the smaller children. His care would be directed to those whose intellects were in some degree developed, and his attention turned to the higher branches of education. His labours would be more agreeable, and his temper exposed to fewer trials. The men who were only qualified to teach small children, would be obliged to seek other employments; and those who were competent to give instruction to the more mature intellect, would be engaged in a sphere of usefulness, which would afford the proper field for the exercise of their talents.

The article further and eloquently discourses upon the high and energetick character of the Western Literary Institute, or College of Professional Teachers, and reviews its transactions with admirable skill and discrimination.—*Ed.*

WYOMING.—HALLECK.

Thou com'st in beauty on my gaze at last,
  "On Susquehanna's side, fair Wyoming:"—
Image of many a dream in hours long past,
  When Life was in its bud and blossoming,
And waters, gushing from the fountain spring
  Of pure enthusiast Thought, dimmed my young eyes,
As by the poet borne, on unseen wing,
  I breathed in fancy, 'neath thy cloudless skies,
The Summer's air, and heard her echoed harmonies.

I then but dreamed—thou art before me now
  In life, a vision of the brain no more:
I've stood upon the wooded mountain's brow,
  That beetles high thy lovely valley o'er,
And now, where winds thy river's greenest shore,
  Within a bower of sycamore am laid,
And winds, as soft and sweet as ever bore
  The fragrance of wild flowers through sun or shade,
Are singing in the trees, where low boughs press my head.

Nature hath made thee lovelier than the power
  Even of Campbell's pen hath pictured; he
Had woven, had he gazed one sunny hour,
  Upon its smiling vale, its scenery,
With more of truth, and made each rock and tree
  Known like old friends, and greeted from afar
And there are tales of sad reality,
  In the dark legions of thy border war,
With woes of deeper teints than his own Gertrude's are.

But where are they, the beings of the mind,
  The bard's creations, moulded not of clay,
Hearts to strange bliss and suffering assigned,
  Young Gertrude, Albert, Waldegrave, where are they?
We need not ask.—The people of to-day
  Appear good, honest, quiet men enough,
And hospitable too—for ready pay—
  With manners, like their roads—a little rough,
And hands whose grasp is warm and welcoming, tho' tough.

Judge Hallenback, who keeps the tollbridge gate
  And the town records, is the Albert now
Of Wyoming;—like him, in Church and State,
  Her Dorick column—and upon his brow
The thin hairs, white with seventy winters' snow,
  Look patriarchal.—Waldegrave 'twere in vain
To point out here, unless in yon scarecrow
  That stands full uniformed, upon the plain,
To frighten flocks of crows, and blackbirds from the grain.

Here he would look particularly droll
  In his 'Iberian boat'—and 'Spanish plume,'
And be the wonder of each Christian soul,
  As of the birds that scarecrow and his broom.
But Gertrude, in her loveliness and bloom,
  Hath many a model here,—for woman's eye,
In court or cottage, wheresoe'er her home,
  Hath a heart-spell too holy and too high
To be o'erspread, e'en by her handmaid Poesy.

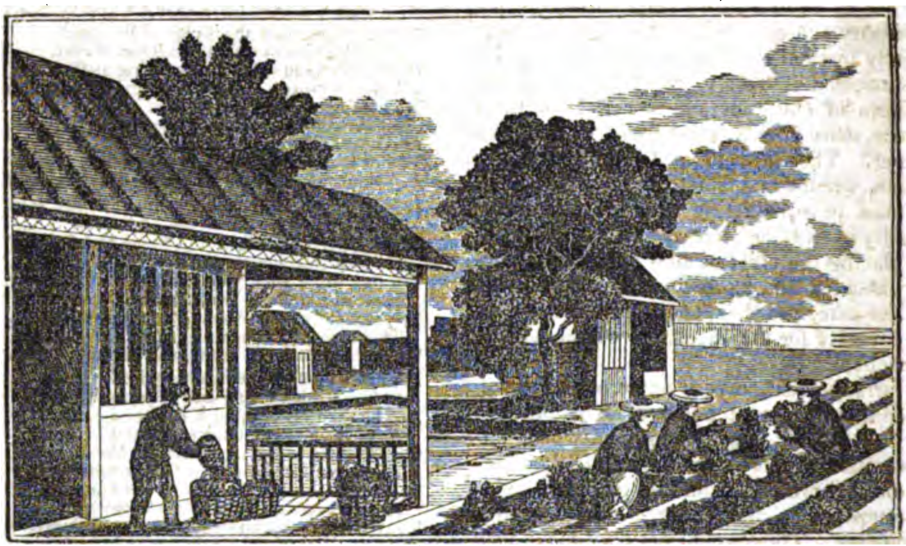
There's one in the next field, of sweet sixteen,
  Singing and summoning thoughts of beauty born
In Heaven—with her jacket of light green,
  "Love-darting eyes and tresses like the morn,"
Without a shoe or stocking, hoeing corn;
  —Whether like Gertrude, she oft wanders there
With Shakspeare's volume in her bosom borne,
  I think is doubtful—of the poet player
The maiden knows no more than Cobbett or Voltaire.

There is a woman, widowed, gray, and old,
  Who tells me where the foot of battle stept
Upon their day of massacre. She told
  Its tale, and pointed to the spot, and wept,
Whereon her father and five brothers slept,
  Shroudless, the bright-dreamed slumbers of the brave,
When all the land a funeral mourning kept,
  Aud there wild-laurels, planted on the grave
By Nature's hand, in air their pale red blossoms wave.

And on the margin of yon orchard hill
  Are marks where time-worn battlements have been;
And in the tall grass traces linger still
  Of "arrowy frieze and wedged ravelin."—
Five hundred of the brave that Valley green
  Trod in the morn, in soldier-spirit gay;
But twenty lived to tell the noonday scene:
  And where are now the twenty?—Passed away.
Has Death no triumph hour—save on the battle-day?

HISTORY OF THE CULTIVATION, MANUFACTURE, AND USE OF TEA.

Cultivation of the Tea-Plant.



Gathering the Leaves of the Tea-Plant.

The tree, or rather shrub, from the leaves of which that refreshing and now indispensable beverage called TEA is made, is a native of China and Japan, in which countries alone it is cultivated for use. It is an evergreen, somewhat resembling the myrtle in appearance, and grows to a height varying between three and six feet. It is capable of enduring great variations of climate, being cultivated alike in the neighbourhood of Canton, where the heat is at times almost insupportable to the natives; and around the walls of Pekin, where the winter is not unfrequently, as severe as in the north of Europe. The best sorts, however, are the production of a more temperate climate; the finest teas are said to be grown in the province of Nankin, occupying nearly the middle station between the two extremes mentioned above; and the greatest portion of what is brought to the Canton market, and sold to the European merchants, is the produce of the hilly, but populous and industrious, province of Fokien, situated on the seacoast to the northeast of Canton. It appears to thrive best in valleys, or on the sloping banks of hills, exposed to the southern sun, and especially on the banks of rivers or rivulets.

The first European writer who mentions tea is Giovanni Botero, an eminent Italian author, who published a treatise, about the year 1590, on the causes of the magnificence and greatness of cities. He does not mention tea by name, but he describes it in such a manner, that it is impossible to mistake it. "The Chinese," he says, "have an herb, out of which they press a delicate juice, which serves them for drink, instead of wine: it also preserves their health, and frees them from all those evils which the immoderate use of wine produces among us."

The tea-plant is propagated from the seed, and the manner of sowing it is represented in Plate I.

Holes are drilled in the ground at equal distances, and in regular rows; into each hole the planter throws as many as six, or even a dozen seeds, not above a fifth part of the seed planted being expected to grow. While coming to maturity, they are carefully watered; and though, when once out of the ground they would continue to vegetate without further care, the more industrious cultivators annually manure the ground, and clear the crop from weeds.

Amongst other stories relative to the tea-tree, it has been said that some of the finest specimens grow on the precipitous declivities of rocky mountains, where it is too difficult or too dangerous for human beings to gather them; and that the Chinese, in order to procure them, pelt a race of monkeys, which inhabit these inapproachable recesses, with stones, provoking them to return the compliment with a shower of tea-branches. This story, however, refutes itself: the tea-plant, whose leaves are worth gathering for home use or for commerce, is a cultivated, not a wild plant; and where man could not approach to gather, he certainly could neither sow, water, nor manure.

The leaves of the tea-plant are not fit for gathering until the third year, at which period they are in their prime, and most plentiful. When about seven years old, the shrub has generally grown to about the height of a man, and its leaves become few and coarse: it is then generally cut down to the stem, which, in the succeeding summer, produces an exuberant crop of fresh shoots and leaves; this operation, however, is sometimes deferred till the plant is ten years old.

The process of gathering the tea, as represented in plate II., is one of great nicety and importance. Each leaf is plucked separately from the stalk; the hands of the gatherer are kept carefully clean, and, in collecting some of the fine sorts, he hardly ventures to breathe on the plant. At a place called Udis, in the island of Japan, is a mountain, the climate of which is supposed to be particularly congenial to the growth of tea, and the whole crop which grows upon it is reserved for the sole use and disposal of the emperour. A wide and deep ditch round the base of the mountain prevents all access, except to the appointed guardians of its treasures. The shrubs are carefully cleansed of dust, and protected from any inclemency of the weather. The labourers who collect the leaves, are obliged, for some weeks previous, to abstain from all gross food, lest their breath or perspiration might injure the flavour; they wear fine gloves while at work, and during that period bathe two three times a day.

Notwithstanding the tediousness of such an operation, a labourer can frequently collect from four to ten or even fifteen pounds a day. Three or four of these gatherings take place during the season; viz. towards the end of February or beginning of March; in April or May; towards the middle of June; and in August. From the first gathering, which consists of the very young and tender leaves only, the most valuable teas are manufactured; viz. the green tea called Gunpowder, and the black tea called Pekoe. The produce of this first gathering is also denominated in China, Imperial tea, probably because where the shrub is not cultivated with a view to supplying the demands of the Canton market, it is reserved, either in obedience to the law, or on account of its superiour value, for the consumption of the emperour and his court. From the second and third crops are manufactured the green teas, called in our shops Hyson and Imperial, and the black teas denominated Souchong and Congou. The light and inferiour leaves separated from the Hyson by winnowing, form a tea called Hyson-skin, much in demand by the Americans, who are also the largest general purchasers of green teas. On the other hand, some of the choicest and tenderest leaves of the second gathering, are frequently mixed with those of the first. From the fourth crop is manufactured the coarsest species of black tea called Bohea; and this crop is mixed with an inferiour tea, grown in a district called Woping, near Canton; together with such tea as remained unsold the last season.

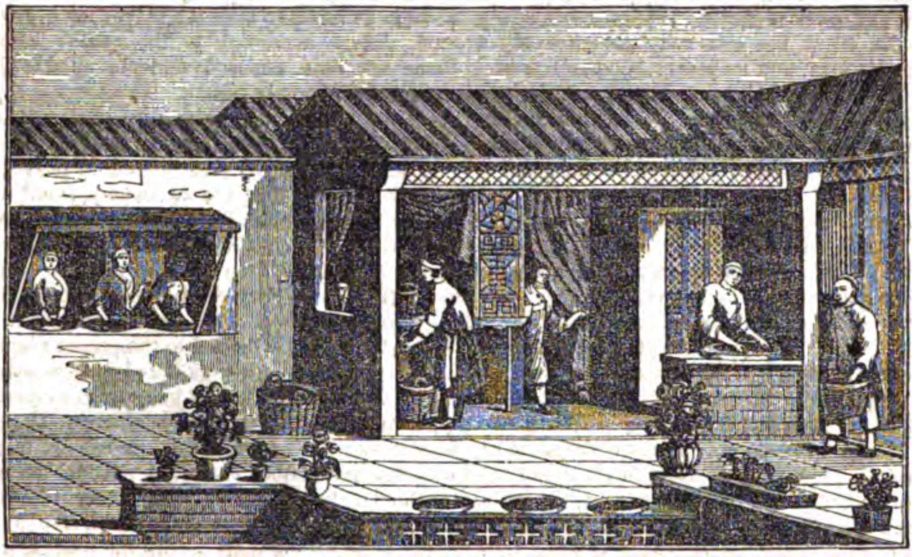
Owing to the minute division of land in China, there can be few, if any, large tea-growers; the plantations are small, and the business of them carried on by the owner and his own family, who carry the produce of each picking immediately to market, where it is disposed of to a class of persons whose business it is to collect and dry the leaves, ready for the Canton tea-merchants.

The process of drying, which should commence as soon as possible after the leaves have been gathered, differs according to the quality of the tea. Some are only exposed under a shed to the sun's rays, and frequently turned. The process represented in the next cut, and which we shall now explain, is supposed to apply only to the green teas.

A drying-house, as represented in plate III., will contain from five to ten or twenty small furnaces, on the top of each of which is a flat-bottomed and shallow iron pan; there is also a long, low table, covered with mats, on which the leaves are spread and rolled, after they have gone through the first stage of the process, which we may call baking. When the pans are heated to the proper temperature, a few pounds of fresh-gathered leaves are placed upon them: the fresh and juicy leaves crack as they touch the pan, and it is the business of the operator to stir and shift them about as rapidly as possible with his bare hands, until they become too hot to be touched without pain. At this moment he takes off the leaves with a kind of shovel, like a fan, and pours them on the mats before the rollers, who, taking them up by small quantities at a time, roll them in the palms of their hands, in one direction only: while assistants with fans are employed to fan the leaves, in order that they may be the quicker cooled, and retain their curl the longer. To secure the complete evaporation of all moisture from the leaves, as well as the stability of their curl, the operation of drying and rolling is repeated two or three times, or even oftener, if necessary—the pans being, on each successive occasion, less and less heated, and the whole process performed with increasing slowness and caution. The leaves are then separated into their several classes, and stored away for domestick use or for sale. It was, at one time, supposed that the green teas were dried on copper pans, and that they owed their fine green colour to that circumstance, which was also said to render a free use of them noxious to the human frame; but this idea is now held to be without any foundation, the most accurate experiments having failed in detecting the slightest particle of copper in the infusion.

After the tea has been thus gathered by the culti-

Drying and Rolling the Green Tea.



Final Process of Mixing the Tea.

vator, and cured and assorted by those who, for want of a better name, we may call tea-collectors, it is finally sold to the "tea merchants" of Canton, who complete the manufacture by mixing and garbling the different qualities, in which women and children are chiefly employed: the tea then receives a last drying, is divided according to quality, packed in chests, and made up into parcels of from one hundred to six hundred chests each, which are stamped with the name of the district, grower, and manufacturer, and called, from a Chinese word, meaning *seal* or *stamp*, CHOPS.

The use of tea as a beverage in China is of an antiquity beyond record, and is as universal as it is ancient: from the emperour to the lowest peasant or labourer, all alike drink tea, varying only in quality. That consumed by the common people must, however, be not only of an inferiour class, but very weak; as the native attendants on Lord Macartney's embassy were continually begging the refuse leaves, which had been already used by the English, because, after pouring fresh water over them, they obtained a better beverage than what they had usually an opportunity of enjoying. On the other hand, some tea presented by the emperour Kien-Long to Lord Macartney was found to want somewhat of the astringency which the British tea-drinker is accustomed to look for and to value in the infusion.

Thrice at least in the day every Chinese drinks tea, but all who enjoy the means have recourse to the refreshing beverage much more frequently; it is the constant offering to a guest, and forms a portion of every sacrifice to their idols. It is made in China as with us, by pouring boiling water on the dried leaves; but the Chinese use neither milk nor sugar.

Mr. Ellis, in an account of one of Lord Amherst's visits of ceremony to Kwang, a mandarin of high rank, says, "The tea served round was that only used on occasions of ceremony, called Yu-tien: it was a small-leafed highly-flavoured green tea. In Lord Amherst's and Kwang's cups there was a thin perforated silver plate, to keep the leaves down, and let the infusion pass through. The cups used by the mandarins of rank, in form, resemble coffee-cups, and are placed in a wooden or metal saucer, shaped like the Chinese boats."

From Mr. Ellis's *Journal* we also transcribe the following passage, descriptive of a plantation, and of the Chinese method of irrigation:—"Our walk led us through a valley, where we saw for the first time, the tea-plant. It is a beautiful shrub, resembling a myrtle, with a yellow flower extremely fragrant. The plantations were not here of any extent, and were either surrounded by small fields of other cultivation, or placed in detached spots; we also saw the ginger in small patches, covered with a framework to protect it from the birds. Irrigation is conducted by a chain-pump, worked by the hand, capable, I think, of being employed in England with advantage. An axle, with cogs, is fixed at each end of the trough, over which the flat boards pass; at the end of the uppermost axle crossbars are attached, serving as a wheel; to these again handles are fixed, which the man works, using each hand alternately. The labour is light, and the quantity of water raised considerable. The view from the top of the mountain repaid the labour of ascent. The scene was in the true mountain style, rock above rock in endless and sublime variety. This wildness was beautifully contrasted by the cultivation of the valleys, speckled with white cottages and farmhouses. We had been observed from the low grounds by the peasants, and on our descent were received by a crowd, who followed us with shouts, that might, had it not been for their subsequent civility in offering us tea, have been mistaken for insolence; as it was, they certainly were merely the rude expressions of astonishment."

In Japan, where tea is also a beverage common to most classes of persons, they reduce it to a fine powder, which they place before the company, in a box forming part of the tea-equipage. The cups being filled with warm water, the powdered tea is taken from the box, on the point of a knife, and thrown into the cups, which are then handed to the company.

It remains only to give a short account of the introduction of tea into England, and of the progress of a trade, which to use the words of Mr. M'Culloch, is, considering its late rise, and present magnitude, the most extraordinary phenomenon in the history of commerce. The Dutch are said to have brought tea to Europe early in the seventeenth century, but there is no trace of its being known in this country until after 1650; in 1660 it is coupled with coffee, chocolate and sherbet, in an act imposing a duty of eight pence a gallon on all quantities of these liquors sold in coffee-houses. That it was, however, in no very extensive demand, even among people of fashion, and as a foreign luxury, may be conjectured from a memorandum of Pepys, who says in his *Diary*, "25th September, 1661, I sent for a cup of tea, a China drink, of which I had never drunk before."

Three years after, two pounds two ounces of it were considered a present which it was not unworthy the king (Charles the Second) to receive from the East India Company, and in 1667 that company for the first time, gave an order to their agents to send some on their account to England, limiting the order, however, to *one hundred pounds of the best that could be got*. The price of some brought from Holland about this time by the earls of Arlington and Ossory, distinguished noblemen of the court of Charles the Second, is said to have been 60*s*. a pound.

The tea-trade of England did not make much progress during the early part of the eighteenth century, for the importation between the years 1700 and 1710, amounted to less than 800,000 pounds. It was still a scarce luxury, confined to the wealthy: it was made in small pots of the most costly china, holding not more than half a pint, and drunk out of cups whose capacity scarcely exceeded that of a large tablespoon. It is probably to this period, or somewhat later, that we may refer the anecdote, if true, of the country lady, who, receiving as a present a small quantity of tea, in total ignorance of its real use, looked upon it as some outlandish vegetable, boiled it until she thought it was tender, and then throwing away the water, endeavoured to eat the leaves.

In the century between 1710 and 1810, the teas imported into England, amounted to upwards of 750 millions of pounds, of which more than 630 millions were sold for home consumption; between 1810 and 1828, the total importation exceeded 427 millions of pounds, being on an average between twenty-three and twenty-four millions a year; and in 1831, the quantity imported, was 26,043,223 pounds.

THE HOTTENTOTS.

From an original drawing of an old Hottentot herdsman—taken from life.

Mild, melancholy, and sedate, he stands,
Tending another's flocks upon the fields,
His father's once, where now the white man builds
His home, and issues forth his proud commands.
His dark eye flashes not; his listless hands
Lean on the shepherd's staff; no more he wields
The Libyan bow—but to th' oppressor yields
Submissively his freedom and his lands.
He has no courage?—once he had—but, lo!
Hard servitude hath worn him to the bone.
No enterprise?—alas! the brand, the blow,
Have humbled him to dust—e'en *hope* is gone.
"He's a base-hearted hound—not worth his food"—
His master cries—"he has no GRATITUDE!"

When the Dutch began to colonize the southern angle of the African continent, about the middle of the seventeenth century, they entered the country as friends, and easily obtained from the natives, for a few trinkets and flasks of brandy, as much territory as was required for their infant settlement. The native inhabitants, afterwards known by the name of HOTTENTOTS,[*] are described by the best authorities as being at that period a comparatively numerous people. They were divided into many tribes or classes, under the patriarchal rule of their respective chiefs or elders; and as they did not, like the Caffers, cultivate grain or esculents, their only steady occupation was the care of their flocks and herds. Enjoying a serene and temperate climate, little clothing or shelter was sufficient for their wants. A mantle formed of sheepskins sewed together with threads of sinew, and rendered soft and pliable by friction, sufficed for a garment by day and a blanket by night. A hut, framed of a few boughs or poles covered with rushmats, and adapted to be conveyed like a tent on the backs of their pack oxen, was a sufficient protection from the weather. A bow and poisoned arrows, and the light spear or javelin, now known by the name of assagai, were their only arms, and were used alike for war or the chase. They were then (as their descendants continue to be) bold and ardent huntsmen; for, with the formidable beasts of prey which inhabit the country, they had to maintain an incessant warfare in defence of their flocks, and in contending for the dominion of the desert. They had also their quarrels and wars with each other; but these appear to have been generally conducted with as moderate a degree of bloodshed and ferocity as is to be found among any people in a similar state of society. Yet, though of a mild and somewhat inert disposition, they were by no means deficient in courage. They defeated and slew Almeida, the first viceroy of the Portuguese in India, in an obstinate engagement at the Salt river, near the spot where Cape Town now stands; and in Dr. Phillip's valuable "Researches in South Africa," will be found recorded, upon the authority of their Dutch invaders, the acts of bravery and heroick devotion exhibited by individuals of this race scarcely to be surpassed in the history of any other people.

For a considerable period the intercourse between the European settlers and the natives continued on an amicable footing. The territorial occupation of the country was not at first the object of the Dutch East India Company, under whose control the settlement was placed; and there was neither mineral wealth nor extraordinary fertility of soil to tempt the forcible appropriation of native labour in a way similar to what occurred in the West Indies, Mexico, and Peru. At length, however, the Dutch settlers discovered that though the country furnished neither gold nor silver, nor any of the much-prized tropical products, it was well adapted for the culture of corn and wine, and for the rearing of flocks and herds, almost without limit. Emigrants accordingly began to flock to South Africa; and the "white man's stride,"[†] with or without the nominal acquiescence of the natives, was gradually extended. After the lapse of a century and a half, the European intruders had acquired possession of nearly the whole of the extensive region now embraced by the colonial boundary, including the entire country inhabited by the Hottentot race, with the exception of the arid deserts which afford a refuge to the wandering Namacqua and Bushman hordes, and which are too steril and desolate to excite the cupidity of any class of civilized men.

But it was not the soil of their country merely of which the Hottentots were deprived in the course of these encroachments. In losing the property of the soil, they also gradually lost the privilege of occupying even the least valuable tracts of it for pasturing their flocks and herds—their only means of subsistence. People without land could have no occasion for cattle—no means of supporting them. Their flocks and herds, accordingly, also passed by degrees into the possession of the colonists. Nothing then remained of which to plunder them save the property of their own persons; and of that, the most sacred and unalienable of all property, they were also at length virtually deprived. The laws enacted by the Dutch Home Government, it is true, did not permit the Hottentots to be publickly *sold*, from owner to owner, as negro slaves and other farm stock were sold (and are still sold) in the same colony: but by the colonial laws and usages they were actually deprived of a right to their own labour, and reduced to a condition of degrading, grinding, and hopeless bondage, in some respects even more intolerable than colonial slavery of the ordinary description.

Le Vaillant has given a very lively, and upon the whole, a just and accurate description of the Hottentots in their wild or semi-nomadick state. Mr. Barrow has described, in a less ambitious style, but with equal force and accuracy, their character and condition as he found them at a somewhat later period (1797) after they had been as a people generally subdued under the colonial yoke; and he exposes, with a warmth which does honour to his feelings, the iniquitous and inhuman conduct of their European oppressors. To enable the reader properly to understand the situation of this people at the present time, we must give a brief view of them when Mr. Barrow was Auditor-general of publick accounts at the Cape in 1798—and this we cannot do in any other form so well as in that writer's own words.

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[*] "The name," says Mr. Barrow, "that has been given to this people is a fabrication. *Hottentot* is a word that has no place or meaning in their language; and they take to themselves the name under the idea of its being a Dutch word. Whence it has its derivation, or by whom it was first given, I have not been able to trace. When the country was first discovered, and when they were spread over the southern angle of Africa, as an independent people, each horde had its particular name; but that by which the collective body as a nation was distinguished, and which at this moment they bear among themselves in every part of the country, is *Quaiquæ*."—*Barrow's Travels in Southern Africa*, vol. i. p. 100.

[†] The usual mode of measuring out a new farm, during the Dutch occupation, was for the *Veld-wagt-Meester* of the district *to stride*, or pace the ground; and half an hour's stride in each direction from the centre, or one hour's walk across the *Veld* (country) was the regulated extent of the farms.—See *Barrow*, vol. i. p. 29.

After mentioning the comparative happiness and more numerous population of the Hottentots in their independent state, which in the eastern part of the colony existed so late as about twenty years before the period of his travels, Mr. B. thus proceeds:

"Some of these villages might have been expected to remain in this remote and not very populous part of the colony. Not one, however, was to be found. There is not, in fact, in the whole extensive district of Graaff-Reynet, a single horde of independent Hottentots; and perhaps not a score of individuals who are not actually in the service of the Dutch. These weak people, the most helpless, and in their present condition perhaps the most wretched, of the human race, duped out of their possessions, their country, and their liberty, have entailed upon their miserable offspring a state of existence to which that of slavery might bear the comparison of happiness. It is a condition, however, not likely to continue to a very remote posterity. Their numbers of late years have been rapidly on the decline. It has generally been observed that wherever Europeans have colonized, the less civilized nations have always dwindled away, and at length totally disappeared." After specifying some other causes which he imagines may have contributed to the depopulation of the Hottentots, Mr. Barrow proceeds:—

"To these may be added their extreme poverty, scantiness of food, and continual dejection of mind, arising from the cruel treatment they receive.

"There is scarcely an instance of cruelty said to have been committed against the slaves in the West Indian islands, that could not find a parallel from the Dutch farmers of the remote districts of the colony towards the Hottentots in their service. Beating and cutting with thongs of the hide of the sea-cow (hippopotamus) or rhinoceros are only gentle punishments, though this sort of whip, which they call sjamboc, is a most horrid instrument, being tough, pliant, and heavy almost as lead. Firing small shot into the legs and thighs of a Hottentot, is a punishment not unknown to some of the monsters who inhabit the neighbourhood of Camtoos river.

"By a resolution of the old government, as unjust as it was inhuman, a peasant (colonist) was allowed to claim as his property, till the age of five and twenty, all the children of the Hottentots in his service to whom he had given in their infancy a morsel of meat. At the expiration of this period the odds are ten to one that the slave is not emancipated. But should he be fortunate enough to escape at the end of this period, the best part of his life has been spent in a profitless servitude, and he is turned adrift without any thing he can call his own, except the sheepskin on his back." Again, speaking of "those Hottentots living with the farmers of Graaff-Reynet in a state of bondage," Mr. Barrow adds, "it is rare to observe the muscles of his face relaxed into a smile. A depressed melancholy and deep gloom constantly overspread his countenance.

"Low as they are sunk," he continues, "in the scale of humanity, their character seems to have been generally much traduced and misrepresented. It is true there are not many prepossessing features in the appearance of a Hottentot, but many amiable and good qualities have been obscured by the ridiculous and false accounts with which the world has been abused. They are a mild, quiet, and timid people; perfectly harmless, honest, and faithful; and though extremely phlegmatick, they are nevertheless kind and affectionate to each other, and by no means incapable of strong attachments. A Hottentot will at any time share his last morsel with his companions. They seldom quarrel among themselves or make use of provoking language. They are by no means deficient in talent, but they possess little ambition to call it into action.

"The person of a Hottentot while young is by no means devoid of symmetry. They are clean-limbed, well-proportioned, and erect. Their hands, their feet, and all their joints are remarkably small. Their cheek-bones are high and prominent, and with the narrow-pointed chin form nearly a triangle. The nose is in some remarkably flat, in others considerably raised. The colour of the eye is a deep chestnut; and the eyelids at the extremity next the nose, instead of forming an angle, as in Europeans, are rounded into each other exactly like those of the Chinese, to whom indeed in many other points they bear a physical resemblance that is sufficiently striking. Their teeth are beautifully white. The colour of the skin is that of a yellowish brown, or a faded leaf, but very different from the sickly hue of a person in the jaundice, which it has been described to resemble many indeed are nearly as white as Europeans. Some of the women, when young, are so well formed that they might serve as models of perfection in the human figure. Every joint and limb is rounded and well-turned, and their whole body is without an angle or disproportionate protuberance. Their hands and feet are small and delicately turned; and their gait is not deficient in easy and graceful movements. Their charms, however, are very fleeting." He then describes their ugliness generally, at a more advanced age.

Such, with the omission of some details, is the description of the Hottentots given by Mr. Barrow in his very instructive and able work on South Africa. To this accuracy in almost every point the writer of this notice can bear witness; and his object in introducing it here is partly with a view to counteract the exaggerated notions that still generally prevail respecting the physical deformity and moral debasement of this long-oppressed and calumniated race of men; and partly to enable the reader fully to appreciate the wretchedness of the condition from which they have been at length raised by the tardy justice of the British government. Four years and a half ago, namely, in July 1828, the Hottentot Helots of the Cape, 30,000 in number, were emancipated from their long and grievous thraldom, and admitted by law to all the rights and privileges, civil and political, of the white colonists.

Eng. Mag.

WRITE WRITTEN RIGHT.—[A Twistification.]

Write we know is written right,
When we see it written write;
But when we see it written right.
We know it is not written wright
For write, to have it written right,
Must not be written right or wright,
Nor yet should it be written rite;
But *write*, for so 'tis written right.

AMERICAN LYCEUM.

(Continued from p: 36.)

Quantum est in rebus inane!—Pers. Sat.

At the conclusion of our first notice of this institution, we started the inquiry, What equivalent has it rendered for its discouragement of the American Associate Society, or how has it fulfilled the expectations of the country?

On recurring to the history of its operations, we were mortified to find, that, although we should be disposed to extend to it the most charitable credit, and are always happy to yield the fullest encouragement to the Mæcenases that there may be many Maros, the proceedings of this association have been as puerile and feeble, as its pretensions are empty and unjust. Established with the avowed purpose of supplying the great desideratum, namely, a National Institution, where the learned and efficient men of the nation might convene, to consult together upon the interests of our national literature and education, did not the country legitimately expect either some projects for our national improvement, or at least some certain and definite results of general use and importance, that should be alike worthy of its high-sounding title and honourable to the nation? Is it possible that the learned men of England, France, and Germany, emulous as they are in the walks of science, can have looked upon such an institution rising up in the country of a Franklin, and not have expected something of importance from it? Have not the friends of education for a long time anticipated a new and important era in our history, as the result of such an establishment? And has not the American Lyceum assumed to be such an institution, and flattered itself that it is satisfying the United States as well as Europe in this particular? If it is, as we believe it to be, impossible to deny that it has assumed this rank and responsibility, it seems indeed proper to inquire, whether it maintains this high assumption, and justly discharges this responsibility.

Since the publication of our last number we have received an anonymous communication, purporting to be an answer to the notice of this institution therein contained, accompanied with several documents containing the history of the proceedings of the American Lyceum, from its first annual meeting; the whole of which, doubtless, our kind correspondent intended should enlighten our ignorance of its object, and exalt our humble opinion of its proceedings. We have been induced to believe, that we are indebted for this act of intended kindness, to the profound Corresponding Secretary of this association, the *sanguine* officer referred to in our last paper. But as it does not directly attack our positions, and presents nothing important or instructive, we have deemed it not worth publishing, especially in its present sadly unfinished plight; regretting at the same time that we are compelled thus to deal with the communications of the Corresponding Secretary of *the* great National Institution of America.

For the edification of the publick, and especially those readers who desire to know what the real or pretended objects of this Lyceum are, however, we extract from the Secretary's letter the following novel and important announcement: "The American Lyceum, though it has not been able to accomplish half the good it aims at, is yet not so inert as the Editor of the Family Magazine supposes. It has undertaken active operations of various kinds, for the promotion of useful knowledge: being founded on the principle [mark this] that all classes in a country like ours, are capable of much mental improvement [!], and by simple means [!!]. The constitution limits the operations of the society to the diffusion of useful knowledge and the promotion of education, principally in common schools; while an amendment provides for the formation of several departments, by which persons interested in other branches, including the useful as well as fine arts, may be encouraged to communicate their views, in a popular form, for the benefit of persons who may wish to learn something of them." [!!]

Thus it is perceived we have the length and breadth, the height and depth of the (North and South) American Lyceum. Here we are officially informed from a source that assumes to be entitled to credit, that "all classes are capable of much mental improvement by simple means;" comprehending, doubtless, under the term "classes," the Wulwa nations of Mexico and the Simiæ tribes of South America. This is the principle upon which the Lyceum is founded, and its operations are limited to the dissemination of useful knowledge and the promotion of education in common schools. This latter clause, however, we think must certainly be an errour, for those operations of the Lyceum which compass the mental improvement of the Simiæ tribes "by simple means," must unquestionably be prosecuted through the medium of a very *uncommon* school. We cannot easily attach any other meaning to this statement of the principle on which it is sagely said the American Lyceum is founded. Sorely pitying the pedagogical missionary whom this grave institution undertakes to send to educate the fifth-limbed, long-tailed, mischievous Ateles of South America, we will proceed to notice *seriatim* the operations of the Lyceum.

The Lyceum was organized, as we described in our last, in 1831. Its first annual meeting was holden in this city in May, 1832, and continued in session three days. Some fifty or sixty members it is reported, were present, and Dr. John Griscom presided. The verbal statements of members concerning Lyceums that had been formed in different sections of the country, about which we assure the reader, the man of the school apparatus knew more than any other man in the nation; the reading of the annual report, in which the author informs us that the *objects* of the American Lyceum had been published in the Aurora Fluminense, a Rio de Janeiro newspaper! and recommends that a building be erected which might afford some visible evidence of the society's existence, the *internal* evidence doubtless being circumstantial, invisible, and impalpable, together with the reading of several communications by different members, constituted the sole business of the Lyceum during the session. The essays were eight in number, viz.; one on School Discipline, by Prof. Griscom; one on the Study of our Political Institutions, by Mr. Frelinghuysen; a third, on Primary Education in Spain, by Prof. Pizarro; a fourth on the Introduction of the Natural Sciences into Common Schools, by Prof. C. Dewey; a paper on Improving Common Schools, by Mr. Penny; an essay on Infant Education, by Dr. Keagy; on Learning to Read and Write the English Language, by Dr. Weeks; and lastly, a communication concerning Lyceums, by Mr. C. M. Shephard. Some of these essays had a little merit, others none at all, and have, we believe, been published in the Annals of Education, a Boston paper.

At the second annual meeting in 1833, nearly the same amount of business was transacted, though we know of but two decent essays that were read before the Lyceum at this session. One of these essays was on the Appropriate Use of the Bible in Common Education, by the much lamented Thomas S. Grimke; and the other on Vocal Musick as a Branch of Common Education, by Mr. W. C. Woodbridge; though the Lyceum cannot claim the credit of having caused the production of either. Both of these essays were highly creditable, the former especially was excellent, as almost every thing was that came from the eloquent pen of Grimke.

The meeting of 1834 was not of quite so high moment as those of the preceding years. The only thing of any importance that was presented to the Lyceum this year, was a small work by President Duer, on the Constitutional Jurisprudence of the U. S., which *possibly* paid publishing. The number of members in attendance was also prodigiously diminished.

At the session of May last, seven communications were read. Messrs. Dunlap, Cole, and Fraser, furnished one each on the Fine Arts; Prof. Dewey, one on the Grasses of the U. S.; a paper on Education among the Armenians, by Mr. Oscanean, a native of Armenia; Miss Catherine E. Beecher's Essay on the Education of Female Teachers, which had previously been published, was also read; and another on Books and Apparatus for the Blind, by Dr. Russ. Of these essays we can only say, that they were of moderate merit, with the exception of that of Miss Beecher. That essay is of more value and interest than all the other productions of the Lyceum put together. It takes such a comprehensive and liberal view of education and its wants in the United States; exhibits so much practical knowledge and good sense in relation to the condition of females, their resources, power, and capacity for usefulness; the practicability and necessity of placing the rising generation under their tutelage and control; and urges with so much eloquence the necessity of educating females liberally and thoroughly for the especial purpose of teaching youth; that, while it cannot fail to produce a powerful impression upon the intelligent of the female sex, to whom it opens a new and glorious prospect, it must also effectively awaken the philanthropick and the educated of the country to the full importance of this interesting but neglected subject. We intend to publish this admirable essay ourselves, and hope it may reach the understanding of every intelligent individual in the country.

We have thus briefly reviewed the operations of the American Lyceum, and find ourselves at last only able to yield it the poor merit of having requested the writing of some dozen or twenty essays, and the Mother's Primer, in the space of five years. These authors wrote, not under the patronage or pecuniary encouragement of the Lyceum, but either for fame or motives of philanthropy, at the society's honourable request, and doubtless would have written, and will continue to write, though without the pale of this paternal and *inciting* encouragement. When knowledge is universally disseminated and all "classes mentally improved," by such "simple means" or "requests," the earth will revolve in a new direction. Here is our objection; here is the substance of our complaint; the American Lyceum is not what it assumes to be; neither is it what a National Literary Institution should be; its false pretensions, while they deceive the people of this country, are calculated to retard our steps in the formation of an enduring national literature, and the establishment of a worthy national education society; its objects are indefinite; its efforts are too feeble and too vaguely directed; its proceedings, while they assume a mock parliamentary dignity, are yet marked with the juvenility of sophomores.

In regard to its corporal existence, if it can be said to have any, it is like a certain militia company in New Hampshire, that was endowed with a captain, a lieutenant, an ensign, four sergeants, and one private. That redoubtable martial branch of our nation's defence found no other active duties than those of drilling that lonely private, till his devoted nature revolted at the continuous labour of the oppressive drill, and he suddenly profited of that virtuous valour which fortified his heels. Not dissimilar to that patriotick band has been the condition of the American Lyceum, whose head, reversing the order of the juggler's feat, at every session swallows its own body! To illustrate; the Lyceum has a President, four or five Vice-presidents, and two Secretaries; at one period of the session in 1833, for instance, there were present four delegates; the American Lyceum organized, and one delegate was elected President, another Recording Secretary; the remaining two were thrown upon their rights, *ex officio*, which were manifested in this wise:—one made a motion, the other seconded it, and the votes of both carried it unanimously! The Corresponding Secretary must then report, and the Executive Committee go out to consult on certain national measures! *Rara avis in terris*, would have appeared the wayworn delegate who had stepped into the midst of these extraordinary operations of the National Society at such a momentous crisis! At the session of this year, it became necessary at its close to elect officers for the ensuing year, but there happened to be no members present. The Lyceum, however, was relieved by the ingenious expedient of a Boston gentleman present, who, observing their embarrassment, kindly rose and moved that those who had officiated for the past year continue to hold their offices for the year ensuing. It is needless to remark, the motion was adopted unanimously!

Judge Hall describes a western man who carried a country dry-goods store in his hat, which same place was also appropriated to the purposes of a country postoffice. If, in the course of the year, curiosity should be excited to such a pitch, as to attempt to identify the American Lyceum, it will be found personated, incorporated, and perhaps visibly alive in a certain little mortal secretarial existence, that perambulates Wall and Nassau streets, New York, and dabbles a little in newspaper literature and gazetteers.

This is the great American Lyceum—these its operations—that the mountain, these the mice.

But the Secretary inquires, "How can the American Lyceum be improved?" We can only answer;

> —Quæ res in se neque consilium, neque modum
> Habet ullum, eam consilio regere non potes.

The thing that in itself has neither measure nor consideration, counsel cannot rule. Go home to your family, your neighbourhood, your beat-company, town, county, district, and state lyceums, and you will find more than sufficient room for your labours for years to come. We are not opposed to your neighbourhood lyceums; the essays, the lecture, the debate, the conversation, as they are there produced, are highly useful, important, essential. Cultivate them; keep up the interest; let them be attended fully, punctually; they enlarge the resources of happiness, liberalize the affections, enlighten the understanding. When those approximate to a more perfect system, and attain to a less equivocal permanency, then will be abundant time to take up the minor consideration of a National Society. "Let us create the state system first," said Grimke, "and then we may safely leave the State Lyceum to decide for itself and its constituents, whether it shall be represented in the National Society." If it shall ever possibly be deemed expedient, that the various lyceums of the country should be represented in a national assembly, we pray they may hit upon a sager principle for its foundation, be imbued with a little more energy and sense, have a more definite purpose, more body, more modesty, and a little less empiricism than have distinguished that burlesque upon the system, "The American Lyceum."

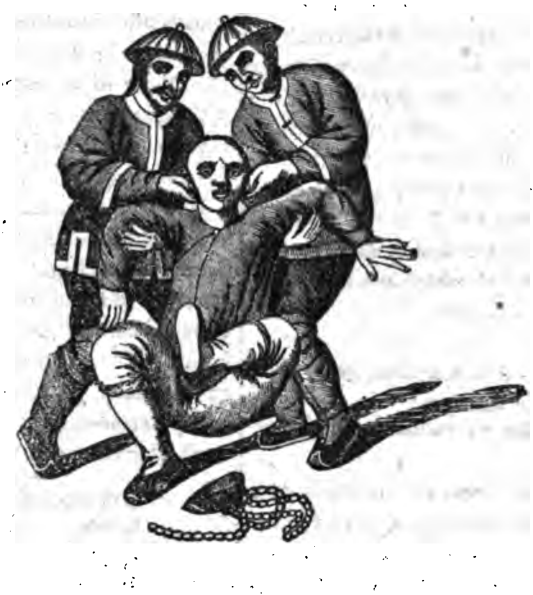
SUPERSTITIONS OF THE DRUIDS.

The Druids, or Priests of the Ancient Britons, are said to have retained the belief of one supreme God, all-wise, almighty, and all-merciful, from whom all things which have life proceed; though they feigned that there were other gods beside Him in whom we live and move and have our being; Teuiates, whom they called the father, and Taranis the thunderer, and Hesus the god of battles, and Andraste the goddess of victory: Hu the mighty, by whom it is believed that Noah, the second parent of the human race, was intended; Ceridwen, a goddess in whose rites the preservation of mankind in the ark was figured; and Beal or Belinus—for the Phœnicians had introduced the worship of their Baal.

By favour of these false gods, the Druids pretended to foretel future events, and as their servants and favourites they demanded gifts and offerings from the deluded multitude. The better to secure this revenue, they made the people, at the beginning of winter, extinguish all their fires on one day, and kindle them again from the sacred fire of the Druids, which would make the house fortunate for the ensuing year; and if any man came who had not paid his yearly dues, they refused to give him a spark, neither durst any of his neighbours relieve him: nor might he himself procure fire by any other means, so that he and his family were deprived of it till he had discharged the uttermost of his debt. They erected also great stones, so cunningly fitted one upon another, that if the upper one were touched in a certain place, though only with a finger, it would rock; whereas no strength of man might avail to move it if applied to any other part: hither they led those who were accused of any crime, and, under pretence that the gods would, by this form of trial, show the guilt or innocence of the party, directed him where to touch and make the proof: and thus, at their discretion, they either absolved the accused, or made them appear guilty.

The mistletoe, the seed whereof is eaten and voided by the birds, and thus conveyed from one tree to another, they affected to hold in veneration. When it was discovered growing upon an oak, upon which tree it is rarely to be found, the Druids went thither with great solemnity, and all things were made ready for sacrifice and for feasting. Two white bulls were fastened by their horns to the tree; the officiating priest ascended, and cut the mistletoe with a golden knife; others stood below to receive it in a white woollen cloth, and it was carefully preserved, that water wherein it had been steeped might be administered to men, as an antidote against poison, and to cattle, for the sake of making them fruitful. The sacrifice was then performed. The best and most beautiful of the flocks and herds were selected for this purpose. The victim was divided into three parts: one was consumed as a burnt-offering; he who made the offering feasted upon another, with his friends; and the third was the portion of the Druids. In this wise did they delude the people. But they had worse rites than these, and were guilty of greater abominations. They were notorious above the priests of every other idolatry, for the practice of pretended magick. They made the people pass through fire, in honour of Baal; and they offered up the life of man in sacrifice, saying that when the victim was smitten with a sword, they could discover events which were to come, by the manner in which he fell, and the flowing of his blood, and the quivering of his body in the act of death. When a chief was afflicted with sickness, they sacrificed a human victim, because, they said the continuance of his life might be purchased if another life were offered up as its price; and in like manner, men were offered up when any calamity befell the people, and when they were about to engage in war. Naked women, stained with the dark blue die of woad, assisted at these bloody rites. On greater occasions, a huge figure, in the rude likeness of man, was made of wickerwork, and filled with men: as many as were condemned to death for their offences were put into it; but if these did not suffice to fill the image, the innocent were thrust in, and they surrounded it with straw and wood, and set fire to it, and consumed it, with all whom it contained.

Their domestick institutions were not less pernicious than their idolatry. A wife was common to all the kinsmen of her husband, a custom which prevented all connubial love, and destroyed the natural affection between child and father; for every man had as many wives as he had kinsmen, and no man knew his child, nor any child its father. These were the abominations of our British fathers after the light of the Patriarchs was lost among them, and before they received the light of the gospel



CHINESE PUNISHMENTS, No 5

TWISTING A MAN'S EARS.

He is held securely by two men in the service of a tribunal who are instructed to give pain, by a particular method of turning the cartilages of the ear.

ITEMS OF INTELLIGENCE.

A very violent and destructive tornado occurred at New Brunswick, N. J., on Friday the 19th June. It approached that city from the northwest, having the appearance of an immense conical volume of black smoke, filled with flakes of fire from some burning buildings, and greatly agitated by the air. "It occupied," says the Fredonian, "a width varying from one hundred to two hundred yards, now contracting and then expanding, and had an undulating as well as whistling motion, striking the earth with great force, and tearing up the largest and most firmly rooted trees, or twisting them off, and then rebounding, taking off the roofs and upper stories of the strongest buildings, and passing over one here and there with scarcely any damage. Its course was southeast."

After it left New Brunswick it seems to have crossed the Raritan, and pursued its way to Piscataway, two miles distant, which is almost entirely demolished. It followed the Raritan out to the ocean.

In New Brunswick three lives were lost, and many individuals were seriously wounded. The loss of property is estimated at $75,000.

NOTICES, REVIEWS, &c.

"The AMERICAN ARITHMETICK, adapted to the trade and commerce of the United States, embracing the most concise practical calculations of real business, not to be found in any other book of the kind; exemplified by the author's method of teaching arithmetick and book-keeping on the black boards. Designed for the use of Schools, Academies, and Clerks, by JAMES BENNETT, Accountant, Attorney and Counsellor at Law; author of the American system of practical book-keeping, and professor to the institute of accountants of the state of New York."

The mercantile community are already indebted to Mr. Bennett, for his invaluable "*System of Book-Keeping*," and we think their obligations vastly increased by the publication of this Arithmetick, which contains more useful, and indeed indispensable instruction for that portion of our youth who are educating for the counting-house, than all other similar works which have been published in this country put together.

"General Partnerships," "Exchange," "Bank Interest," "Mercantile Interest," "Discount," "Ensurance," and "Commission," are among the branches presented in this book, all of which are treated of in a clear and perspicuous manner.

THE NORTH AMERICAN ARITHMETICK.

By Frederic Emerson.

Agreeably to our promise we extend our notice of this work

Arithmetick, whether we consider its study as a qualification for active business, or as a mental discipline, holds the first place in the education of youth. As soon as the child has learned to read, it is of the first importance that a knowledge of arithmetick, competent to the transaction of business, be secured to him. Nor is it less important that it should be thus early introduced, as a discipline for the mind of the student, who intends to pursue a more extensive course of study. And yet, notwithstanding its great importance, no science has been more superficially taught, or more imperfectly understood. Books have been multiplied upon the subject, and teachers have anxiously sought, in each successive publication, relief from embarrassments into which former ones had thrown them, until by successive disappointments they had become nearly discouraged. The majority of teachers, 'tis true have been satisfied with teaching the mechanical operations which are pointed out in the rules of Pike and Daboll. But the active, intelligent and conscientious teacher, mortified at seeing a noble science of such practical utility thus chained down to mechanical rules, has thrown aside all books and made *himself a book* to his scholars. This is the state in which Mr. Emerson's work finds our schools in regard to the arithmetical science. It ought, however, to be remarked, that much credit is due to Mr. Colburn for his admirable little book on "Mental Arithmetick"—to Mr. Hasler for a treatise on "Demonstrative Arithmetick," —and to Mr. Cobb and many other authors for useful hints, and correct rules in Explanatory and Operative Arithmetick. But notwithstanding the labours of all these men, it still remained for some friend to the cause of education to unite the three branches of mental, demonstrative, and operative arithmetick into one *practical system of arithmetick*. This, in our judgment, Mr. Emerson has done. In the Third Part of his arithmetick he has imbodied in a condensed form, information on a variety of subjects, properly connected with arithmetick, which can be found in no other American publication; and which not only renders it more interesting and instructive to the student, but a convenient book of reference to the man of business. That there will be many improvements on Mr. Emerson's system there can be no doubt; but so far as we have been able to judge, his system embraces most of the advantages of all the other systems now in use.

It is published in three parts, which are calculated to lead the student on from the elementary principles, thoroughly and understandingly, to the more abstruse branches of the science. The first intended for beginners, the last for advanced scholars. The work is, we believe, in every respect original, and cost the author many years of industrious study. We sincerely recommend it to teachers and students as a work of great merit.

CONSCIOUS GUILT.—J. K. Paulding,

Believe it not, my mother, hope it not.
The earth will whisper it where'er I tread;
Blood, blood will mark my footsteps as I walk,
And every blade of grass I crush will bleed.

The waves will murmur it where'er they roll
Over the sands that hide the cruel deed:
The winds will howl it in the midnight gale:
The stars that see us now betray my crime
With winking; and should all these omens fail,
There is a witness here within against me.

This brow of mine will bear the murderer's mark,
And this polluted heart beat of foul murder.
What need of witnesses, when such as these
Cry out against me?

METHOD OF CATCHING WILD HORSES ON A PRAIRIE.

CATCHING WILD HORSES ON A PRAIRIE.

IMMENSELY variegated as is the surface of the globe, there are still but few of its features that present an aspect of more surpassing interest and beauty than the far-lengthening, wide-expanding prairie. The oceans, the mountains, the hills, the valleys, the torrents and rivers, afford thousands of most admirable scenes, but the face of a prairie smiles with surpassing charms, with indescribable loveliness.

"Lo! they stretch
In airy undulations, far away,
As if an ocean in its gentlest swell
Stood still, with all its rounded billows fixed
And motionless for ever.—Motionless?
No, they are all unchained again. The clouds
Sweep over with their shadows, and beneath,
The surface rolls and fluctuates to the eye;
Dark hollows seem to glide along and chase
The sunny ridges. Breezes of the South!
Who toss the golden and the flame-like flowers,
And pass the prairie hawk, that, poised on high,
Flaps his broad wings, yet moves not—ye have played
Among the palms of Mexico, and vines
Of Texas, and have crisped the limpid brooks
That from the fountains of Sonora glide
Into the calm Pacifick—have ye fanned
A nobler or a lovelier scene than this?
Man hath no part in all this glorious work:
The hand that built the firmament hath heaved
And smoothed these verdant swells, and sown their hopes
With herbage, planted them with island groves,
And hedged them round with forests. Fitting floor
For this magnificent temple of the sky—
With flowers whose glory and whose multitude
Rival the constellations! The great heavens
Seem to stoop down upon the scene in love—
A nearer vault, and of a tender hue,
Than that which bends above the eastern hills."

Stretching far away with indistinct boundaries, or merging into the horizon, the southern prairie appears like a vast sea; its undulations, the seeming swells, its clumps of trees, the islands. Whether the tall, luxuriant grass, mingled with an innumerable variety of flowers loaded with perfume, waves upon its surface, or is shorn close like a pasture, it always exhibits the aspect of unequalled fertility and beauty,

"And the heart swells, while the dilated sight
Takes in the encircling vastness."

The rich clumps of fine trees, collected together here and there in every possible form, and of every species, and some of them planted with the nice regularity of art, add the charm of variety to the lovely scene, while they afford a grateful shelter to the wandering herds and the weary hunter.

It is a rapturous vision to gaze upon these "gardens of the desert;" but how few ever enjoy the luxury! Few countries are adorned with the beautiful scenes, and none more bountifully than America. In no portions of America do they exhibit more beautiful or more varied aspects than in Mexico and Texas. The prairies of Texas especially, are as wonderful in their vast extent, as they are peculiar in beauty and singular in fertility. The adventurous colonist attracted by the paradisiacal scene, who is perhaps, the first

"—— of that advancing multitude,
Which soon shall fill these deserts,"

finds himself not in this great solitude alone. It is thickly peopled with myriads of gaudy insects that flutter over the flowers, with sliding reptiles, beautiful birds, graceful deer, bounding buffaloes, and numerous troops of fine and noble wild horses. The settler selects his spot, builds himself a dwelling in a shady island, and by conforming to certain requisitions of the government, becomes at once the rightful proprietor of nearly as much territory as his eye can at once survey, and when he finds time to enclose it with substantial landmarks, he feels secure against intrusion. He plants his sugar and his cotton, and whatever else he may choose to cultivate, and the benignant climate and prolifick soil shortly yield him the most abundant crop, and he reaps more than a hundred fold. The soil is easily subdued, and with little care whole herds of cattle grow up to enliven the wide domain, where they roam throughout the year without barns and without the northern haystacks or granaries. If he wishes a horse or a drove of horses to ride, to travel, to hunt, to work, he has only to ride into the prairie, and the animals cost him only the trouble of catching them. The horses of Texas are small, run wild in numerous droves over the prairies, and are easily taken and rendered serviceable. They were probably originally introduced by the Spaniards, and are called *mustangs*.

To illustrate the manner of taking these animals, is the object of the engraving and the present article.

The pursuer provides himself with a strong noosed cord, made of twisted strips of green hide, which, thus prepared is called a *lazo*, the Spanish word for a band or bond. He mounts a fleet horse, and fastens one end of his lazo to the animal, coils it in his left hand, leaving the extended noose to flourish in the air over his head. Selecting his game he gives it chase; and as soon as he approaches the animal he intends to seize, he takes the first opportunity to whirl the *lazo* over his head, and immediately checks his own charger. The noose instantly contracts around the neck of the fugitive mustang, and the creature is thrown violently down, sometimes unable to move, and generally for the moment, deprived of breath. This violent method of arrest frequently injures the poor animal, and sometimes even kills him. If he escapes however with his life, he becomes of great service to his master, always remembering with great respect the rude instrument of his capture and ever afterwards yielding immediately whenever he feels the *lazo* upon his neck.

Being thus secured, the lazoed horse is blindfolded; terrible lever, jaw-breaking bits are put into his mouth, and he is mounted by a rider armed with most barbarous spurs. If the animal runs, he is spurred on to the top of his speed, until he tumbles down with exhaustion. Then he is turned about and spurred back again; and if he is found able to run back to the point whence he started, he is credited with having bottom enough to make a good horse: otherwise he is turned off as of little or no value. This process of breaking mustangs to the bridle is a brutal one, and the poor animals often carry the evidence of it as long as they live. After service during the day, they are hoppled by fastening their fore legs together with a cord, and turned out to feed. To fasten them to one spot in the midst of a prairie, where neither tree, nor shrub, nor rock is to be found, is quite a problem. But that is accomplished by putting on a halter, tying a knot at the end, digging a hole about a foot deep in the earth; thrusting in the knot, and pressing the earth down around it. As the horse generally pulls nearly in a horizontal direction, he is unable to draw it out.

The mustangs are small, generally about thirteen hands high, strong, well-formed, and of various colours. They have a most malicious expression, and are very crafty and mischievous. When a number are caught, they are generally driven to market, where they are purchased for three or four dollars, branded, hoppled, then turned out and abandoned to themselves until needed. At some future time they will doubtless become a valuable article of export.

HISTORY.

EGYPT.——1004—752 B. C.

Egypt continued to be governed by a race of kings, concerning whom the common accounts seem not to be very satisfactory. The most considerable or the best known of them were Shishak, Rhamses. Amenophis IV., and Thuoris. Shishak is mentioned in Scripture, and he is by some authors considered the same as Sesostris. But we are disposed to consider Sesostris as much more ancient, and have accordingly spoken of him in a former period.

Concerning *Shishak*, it appears that he built many temples and cities, dug canals, and among other conquests, took Jerusalem and spoiled the temple.

Rhamses possessed a very avaricious disposition. Diodorus informs us, that he was never at any expense either for the honour of the gods, or the welfare of his people; but that his sole delight was in the augmentation of his private treasure, which, at his decease, amounted to no less than 400,000 talents.

Amenophis IV. is thought to be the same with Memnon, whose famous statue was said to utter a sound at the rising of the sun. The monument in which he was buried, is much celebrated for its magnificence. He acquired great renown by his expedition against the Bactrians.

Thuoris lost the Egyptian possessions in the East; and after his death, Egypt, reduced within its natural boundaries, was divided among several little kingdoms for about 44 years.

PHŒNICIANS.

The Phœnicians, during this period, were governed by the successors of Hiram, of whom the first was *Baleazar*, his son; and the seventh from him was *Pygmalion*, the brother of the celebrated Dido. The cruelties of Pygmalion obliged her to flee to Africa, where she founded a mighty sovereignty, as will now be mentioned.

CARTHAGE.

According to the most probable accounts, it was 869 years B. C. when Dido arrived in Africa. The history of the Carthaginians is dated from this event. She fixed her habitation at the bottom of a gulf, on a peninsula, near the spot where Tunis now stands.

From this Carthage arose, a city which afterwards became famous for its wealth and power, and from its connexion with the Roman wars. The early history of the people, who were called after the name of their principal city, is but little known. Its latter history is involved in that of Rome.

It is probable Dido might have found a few inhabitants in this place, whom its local advantages had induced to settle there; but to her and her attendants, Carthage is doubtless indebted for a regular foundation.

The colony had the same language, and national character, and nearly the same laws, with the parent state. In the height of its splendour, it possessed a population of 700,000 inhabitants, and had under its dominion 300 small cities, bordering on the Mediterranean sea. It attained the zenith of its glory under Hannibal and Hamilcar.

Pygmalion, wishing to possess himself of the immense riches of Sichæus, the husband of Dido, took an opportunity, while they were engaged in a chase, to run him through the body with a spear. The suspicion of his sister was awakened; but concealing her design, she requested Pygmalion to furnish her with men and ships, to convey her effects to a small city between Tyre and Sidon, that she might live there with her brother Borca.

The king granted her request; but Dido had no sooner embarked her property on board, than her brother and others, who favoured her real design, set sail for Cyprus, whence they carried off a great number of young women, and then steered their course to Africa.

The Tyrian monarch, thus defeated in his schemes, was about to send a fleet after the fugitives; but the tears of his mother, and the threatening predictions of the oracle, prevented his intended revenge.

Carthage maintained three famous wars against Rome, called the Punick wars, in the third of which it was totally destroyed by Scipio, the second Africanus. It was 23 miles in circumference, and when it was set on fire by the Romans it burnt incessantly 17 days.

ITALY.

In Italy, at the time of Numitor, about 775 B. C., there was a turn in events deserving our notice. *Amulius*, the brother of *Numitor*, being ambitious of the throne, usurped the government, and connected this act with the murder of the king's only son, and with compelling Rhea Sylvia, his only daughter, to become a vestal. He thus meant to prevent any from becoming claimants to the throne.

The event, however, frustrated the hopes of Amulius; for from Sylvia sprung Remus and Romulus, twin brothers, who, at length overcoming Amulius, replaced their grandfather, Numitor, on the throne.

Amulius, hearing of the birth of Remus and Romulus, so contrary to his expectations, ordered the mother to be burned alive, the punishment of incontinent vestals, and the children to be thrown into the river Tiber. The latter sentence was executed, but the former was prevented by the intercession of a daughter of Amulius.

The infants, though put into the Tiber, were saved, since the basket in which they were covered, floated on the surface. It was borne to the foot of the Aventine mount, and there stranded. According to some accounts, a she-wolf suckled them, which is incredible.

According to other accounts, the woman who preserved and nursed them, was called *Lupa*, and as Lupa is the Latin word for she-wolf, this circumstance might have caused the mistake.

The two brothers became shepherds, were fond of hunting wild beasts, and at length turned their arms against the robbers that infested the country. Having been informed of their high birth, they collected their friends, and fought against Amulius, their uncle, and killed him.

Numitor, after an exile of 42 years, was then called to the throne again, and was happy to owe his restoration to the bravery of his grandsons. Such were the youths who were destined by Providence to lay the foundation of a city, which became the mistress of the world.

DISTINGUISHED CHARACTERS IN THIS PERIOD.

Solomon, the son of David by Bathsheba. He succeeded David in the kingdom of Israel. He was the wisest of mankind. In early life he appeared to be exemplary in piety, but was afterwards guilty of great defection from the strictness of religion. It is believed, however, that he did not die an apostate. The temple which he erected at Jerusalem in honour of the God of Israel, has also rendered his name immortal.

He wrote the books of Proverbs, and Ecclesiastes, and the Canticles, all inspired by the Spirit of God. He died 975 years B. C. aged 58 years, and having reigned 40 years.

Homer was not only the greatest of the Greek poets, but the earliest whose works have survived the devastations of time. On these accounts he is styled the father of poetry, and indeed, so far as we can know with certainty, he is the most ancient of all profane *classical* writers.

According to common tradition he was born on the river Melos, not far from Smyrna. Seven illustrious cities contended for the honour of having given him birth: Smyrna, Colophon, Chios, Argos, Athens, Rhodes, and Salamis. His father's name was Mæon, and his mother's Critheis. The circumstances of his life are little known, but it was agreed that he was a *wandering* poet, and that he was *blind*.

His greatest poems, (and they are among the greatest of uninspired books,) are the *Iliad* and *Odyssey*. Other works have been ascribed to him, but without having been sufficiently substantiated. His poetry is characterized by sublimity, fire, sweetness, elegance, and universal knowledge.

The poems of Homer are the compositions of a man, who travelled and examined, with the most critical accuracy, whatever he met in his way. Modern travellers are astonished to see the different scenes which his pen described, almost 3,000 years ago, still appearing the same; and the sailor who steers his course along the Ægean, beholds all his promontories and rocks which presented themselves to Nestor and Menelaus, when they returned victorious from the Trojan war.

The first appearance of Homer's poems in Greece, was about 200 years after the supposed time of the bard. Pisistratus, tyrant of Athens, was the first who arranged the Iliad and Odyssey in the form in which they now appear to us. The Arundelian marbles fix the period in which he flourished, at 907 years B. C.

Hesiod is generally considered as having been a contemporary of Homer. He was born at Ascra in Bœotia. His greatest production was a poem on *Agriculture*, which contains refined moral reflections, mingled with instructions for cultivating fields.

His *Theogony*, another poem, gives a faithful account of the gods of antiquity. Hesiod is admired for elegance and sweetness. Cicero highly commends him, and the Greeks were so partial to his moral poetical instructions, that they required their children to learn them all by heart.

Lycurgus, the son of king Eunomus, flourished about 884 years B. C. He was regent of Sparta, until Charilaus, his nephew, had attained to mature years. Then leaving Sparta, he travelled in Asia and Egypt, for the purpose of improving his mind, and observing the manners, customs, and political institutions of different nations,

Upon his return, he reformed the abuses of the state, banished luxury, and produced a system which gave rise to all the magnanimity, fortitude, and intrepidity, which distinguished the Lacedæmonians.

He first established a Senate, which was composed of 28 Senators, whose authority was designed to preserve the tranquillity of the state, and maintain a due and just equilibrium between the kings and the people, by watching over the encroachments of the former, and checking the seditious convulsions of the latter. All distinctions of rank were destroyed, and by making an equal and impartial division of the land among the members of the commonwealth, Lycurgus banished luxury, and encouraged the useful arts. The use of money, either of gold or silver, was totally forbidden, and the introduction of heavy brass and iron coin, brought no temptations to the dishonest, and left every individual in possession of his effects without any fear of robbery or violence. All the citizens dined in common, and no one had greater claims to indulgence than another. The intercourse of Sparta with other nations was forbidden, and few were permitted to travel. The youths were intrusted to the publick master as soon as they had attained the seventh year, and their education was left to the wisdom of the laws. They were taught early to think, to answer in a laconick manner, to attempt to excel in repartee. They were encouraged to steal, and theft was only punished for being discovered. Thus we are told that a youth who carried off a fox beneath his cloak, permitted the animal to gnaw into his vitals, rather than disclose his theft by dropping the prize.

Having established his laws, and engaged the citizens not to alter them until his return, he left his country, and, by a voluntary death, rendered that event impossible; thus securing, as far as in his power, the perpetuity of his institutions. The laws of Lycurgus were abrogated by Philopœmen, but soon after re-established by the Romans.

Dido, also called *Elissa*, was a daughter of Belus, king of Tyre, and married her uncle Sichæus. Her husband having been murdered by Pygmalion, the successor of Belus, the disconsolate princess, with a number of Tyrians, set sail in quest of a settlement. A storm drove her fleet on the African coast, and there she founded, or enlarged a city, that became much celebrated in the annals of history.

Her beauty, as well as the fame of her enterprise, gained her many admirers, and her subjects wished to compel her to marry Iarbas, king of Mauritania, by whom they were threatened with war. Dido requested three months for consideration, and, during that time, she erected a funeral pile, as if wishing, by a solemn sacrifice, to appease the manes of Sichæus, to whom she had avowed eternal fidelity.

When her preparation was completed, she stabbed herself on the pile, in presence of her people, and by this desperate feat, obtained the name of Dido, *valiant woman*. The poets have made Æneas and Dido contemporaneous, but this is only a fiction, allowed perhaps by the rules of their art.

Isaiah was the son of Amos, and of the lineage of David. He prophesied from 735 to 681 B. C. during the reigns of several kings of Judah. He is the greatest and the sublimest of the prophets. He reproved the sinners of his day with boldness, and exposed the many vices that prevailed in the nation. He is called the evangelical prophet, from his frequent allusion to, and prediction of gospel times. He is said to have been cut in two with a wooden saw, by the cruel king Manasseh.

PHYSICAL GEOGRAPHY.

The simple substances which compose the solid parts of the globe. 1. Saline, earthy, and inflammable substances.

The various substances of which the solid parts of the earth are formed, are either simple, that is, formed of the same chymical elements, and having for their nucleus the same integrant molecule; or aggregate, that is, composed of two or more simple substances. The first of these substances are minerals, the objects of the sciences of mineralogy and crystallography; the second are the rocks and earths, which belong to the province of geognosy.

In the mineral kingdoms four classes are distinguished; the first comprehends saline or acidiferous substances, which are composed of an acid united to an earth or an alkali, and sometimes to both. The second contains the earthy substances, into the composition of which earths alone enter, or sometimes an earth united to an alkali; in the third class are placed all inflammable substances which are not metallick; substances hitherto imperfectly analyzed, but which may be distinguished by the property which they possess, of burning, with decomposition, or of evaporating. The fourth class embraces the metallick substances known by their brilliancy, by their great specifick gravity, and in part, by their ductility and malleability.

In considering the mineral kingdom, in so far as it regards physical geography, we can only glance generally at the genera most abundant in nature, and the species most remarkable for their physical qualities.

The carbonate of lime, that is, lime combined with carbonick acid, and also called calcareous spar, is the most abundant of any known mineral substance on the earth. It forms one of the constituent principles of rocks; is the substance of coral, the finest marble, and beautiful crystals. Sulphated lime, or lime combined with sulphurick acid, is commonly called gypsum, or plaster stone, when mixed with carbonated lime. When crystallized, it is called selenite. Barytes and strontites afford those magnificent crystals which line the cavities in the beds of sulphur in the valleys of Noto and of Mazzara in Sicily. Nitrate of potass or salt-petre is composed of vegetable alkali or potass, nitrick acid, and water. It is found in cellars and deposited on the surface of old walls. Muriate of soda, or common salt, is composed of soda, muriatick acid and water. It is spread throughout nature in an abundance corresponding to its extensive utility. There are immense masses of it in Poland, Hungary, Austria, Bavaria, Hanover, England, and Spain. Borax is found in Thibet, Nepaul, Persia, Tartary, and Saxony. Carbonate of soda, called natron, is found in lakes in Egypt, Hungary, and the plains north of the Caspian. It sometimes cover the plains with a slight afflorescence. Sal-ammoniac, comes from Egypt and Persia. Alum, which is called alkaline-sulphated alumina, is found by itself only in very small quantities, but it is procured from certain earths and stones impregnated with it. A Danish missionary has brought from Greenland a substance, which has been called cryolite, and which melts like ice in the flame of a candle; it is the fluate of alumine and soda.

The first species of earthy substances which attracts our attention, is that of quartz. When it is found in grains, it is of no value except in forming roads; when these grains are united, they form silicious sandstone. In certain shapes and under the operation of certain causes, it is raised to the rank of crystalline flints, and rock crystal. These crystals are found in great purity in Madagascar. When of a violet or purple colour, the rock crystal becomes amethyst; when blue, it is sapphire; when it assumes the colour of rose, it is the ruby; when yellow it is the occidental topaz. Quartz agate, usually called silex, includes the following varieties; the blue and grey chalcedony; the red cornelian; the green chrysoprase. They give the name of onyx to agates formed of two translucid stripes. The coarse quartz agate is used for gun-flints and mill-stones. Spal, is a milky resinous quartz, of varying colours. Jasper is a quartz agate, blended with argil or clay, and a little iron, which gives it a variety of colours. Arenaceous quartz, or quartz in the form of sand, covers almost entirely the bottom of the sea, and forms the deserts. Of this species glass is made.

Almost all the precious stones are composed of alumine or pure argil. The ruby, sapphire, and topaz, consist of ninety-eight parts of alumine, and two of iron. The beautiful green emerald of Peru, and the common beryl, have both the same basis, namely, silex, alumine, glucine and lime; but the colouring principle in the emerald is chrome, and in the beryl, iron. Garnets contain a large proportion of iron; are transparent, and of a bright red and purple violet colour. The diamond, which is now considered a combustible substance, consists of pure carbon. It is most abundant in the East Indies, and in South America. Feldspar forms the base of a multitude of rocks, and predominates in those of primitive formation, constituting at least two thirds of the substance of granite. Extensive mountains are sometimes solely composed of it. It is composed principally of silex and alumine, with small proportions of lime and potash. It cuts glass, is phosphorick, and emits sparks when struck with steel. It is one of the substances of which the Chinese manufacture porcelain. Petrosilex or rock flint, resembles feldspar. Amphibole, though less common than feldspar, holds a no less distinguished rank among the substances which compose the primitive rocks. Mica is a substance remarkable for its metallick brilliancy. It is transparent, and the Siberians use it in their windows instead of glass. Talc, which differs from mica by the greasiness of its surface, is also less hard; it is easily scraped with a knife. The talc of Venice furnishes a powder which renders the skin smooth, and is employed as a cosmetick. Talc is commonly called soap stone. Asbestos, also called amianthus, appears to be produced from the decomposition of primitive rocks, among which it is oftenest found. The asbestos which is found in the mountains of Tarantaise, in Savoy, forms silky filaments of about a foot in length. It appears like fine white silk. The ancients spun it, and made towels, napkins, and head-dresses of it. When these became soiled by use, they were thrown into the fire, which did not destroy the substance of the asbestos, and upon being taken out, were found to be whiter than if they had been washed. In the funeral obsequies of kings and emperours, the dead body was enveloped with clothes of asbestos, before it was placed on the funeral pile; and thus the ashes were obtained quite unmixed. Asbestos abounds in Corsica and Russia. There are a great number of other earthy substances of less importance, which it were tedious to enumerate.

We come now to the inflammable substances which enter into the solid parts of the globe. Among these we may enumerate sulphur, which is found in veins, in powder, striated masses and crystals, and at the mouth of many volcanoes. The diamond is a combustible substance; and anthracite, which appears to have the same principle for its basis as the diamond, namely, pure carbon. Bitumen, in a liquid state, commonly bears the name of petroleum, or mineral tar, and when it is white, that of naphtha. There are springs of it; it floats sometimes upon the surface of the waters; it is said that there is a lake of this description in Mesopotamia. In some places it is drawn up in buckets from wells dug for the purpose. On drying it becomes solid pitch, when it is called asphaltum. Pit-coal appears to be bitumen united to an earthy base. Coal is found in various parts of the earth, where the primitive and secondary rocks join, and is commonly known. Jet seems to be a fossil wood, and resembles hardened asphaltum. The most celebrated of all the bituminous substances, is yellow amber. This substance was formerly found on the eastern coasts of the Baltick sea, where it seemed to have been thrown by the waves, but is now found inland. The largest piece ever known was found twelve miles from the sea, and weighs 13½ pounds, and is preserved in the royal museum of Berlin. It is now worked in quarries in East Pomerania, and other places. It is also found with lignite along the shores of our Southern States, particularly at Cape Sable, Maryland.

POETRY.

THE BIBLE.—William Leggett.

"This is a true saying, and worthy of all acceptation."

This little book I'd rather own,
  Than all the gold and gems
That e'er in monarch's coffers shone,
  Than all their diadems.
Nay, were the seas one chrysolite,*
  The earth a golden ball,
And diamonds all the stars of night,
  This book were worth them all.
How baleful to ambition's eye
  His blood-wrung spoils must gleam,
When death's uplifted hand is nigh,
  His life a vanished dream!
Then hear him with his gasping breath
  For one poor moment crave!
Fool! wouldst thou stay the arm of death?
  Ask of thy gold to save!
No, no! the soul ne'er found relief
  In glittering hoards of wealth;
Gems dazzle not the eye of grief,
  Gold cannot purchase health;
But here a blessed balm appears
  To heal the deepest wo;
And he that seeks this book in tears,
  His tears shall seek to flow.
Here He who died on Calvary's tree
  Hath made that promise blest
"Ye heavy-laden, come to me,
  And I will give you rest.
A bruised reed I will not break,
  A contrite heart despise;
My burden's light, and all who take
  My yoke, shall win the skies!"
Yes, yes, this little book is worth
  All else to mortals given;
For what are all the joys of earth
  Compared to joys of heaven?
This is the guide our Father gave
  To lead to realms of day;
A star whose lustre gilds the grave,
  "The Light, the Life, the Way."

*——"Had she been true,
Would Heaven make such another world
Of one entire and perfect *chrysolite*,
I'd not have sold her for it."—*Shakspeare.*

CHYMISTRY.

NITROGEN.

The next of the four gaseous simple substances, which we shall describe, is Nitrogen (or, as it has sometimes been named, Azote*). Like hydrogen, it belongs to the electro-positive class, being attracted by the negative pole of the Voltaick pile.

It constitutes four-fifths of the atmosphere of our globe, and may most readily be obtained for examination by removing the oxygen with which it is mixed, by the action of some superiour affinity. The residue of the atmospherick air, in which phosphorus has been suffered to burn out, after standing a little while over water, consists of tolerably pure nitrogen; or the oxygen may be absorbed by allowing the air to stand in a receiver over a mixture of equal weights of iron filings, and sulphur made into a paste with water.

Nitrogen gas is distinguished by negative characters, rather than by any active properties.

It is colourless, inodorous, and tasteless; it is not absorbed by water, or only in very minute portions; no animal can live in it; it is not inflammable, and it instantly extinguishes all burning bodies introduced into it.

It is a little lighter than atmospherick air, 100 cubic inches weighing 29.7 grains.

NITROGEN WITH OXYGEN.

Nitrogen may be mixed with oxygen in any proportion; but four parts by volume of the former, and one of the latter, form a mixture resembling atmospherick air in all its properties. The atmosphere also contains a variable proportion of vapour of water as we have already stated, and very minute portions of other matters which will be mentioned hereafter: its essential characters are, however, derived from these two ingredients.

The invariable uniformity of this mixture is one of the most surprising facts with which chymistry has made us acquainted. Air has been examined in the most accurate manner, which has been collected by means of a balloon, from a height of nearly 22,000 feet; and at the level of the sea; from the heart of the most crowded districts of the most populous towns; and from the summit of Mount Blanc; from within the polar circle; and from the equator; and no difference has been discovered from its proportions. The active properties of atmospherick air are all referable to the oxygen which it contains, and are those of that body diluted. Without oxygen no animal could live—in pure oxygen they would live if the expression may be allowed, too rapidly, as a candle would burn with too great intensity. All the vital functions would be increased to a morbid excess. Many experiments have been tried upon the subject, but no gas, or mixture of gases, has ever been discovered which can support life in the same uniform manner as the mixture which has been so admirably adapted to the purpose, and so wonderfully preserved from change. All the common processes of combustion are the result of the affinity of the oxygen of the atmosphere for the bodies which burn in it, and in all it is consumed; but notwithstanding the enormous consumption, from this and other causes, it is perpetually renewed, and its proportion maintained, by an adaptation of means to the end so nicely adjusted, as to form one of the greatest wonders where all is admirable.

There are no known means of making nitrogen and oxygen combine directly in a more intimate manner; and this is probably one provision for the permanence and salubrity of the air we breathe; as such compounds otherwise obtained are all noxious, and most of them corrosive and poisonous. Indications of such a direct union have, indeed, been obtained by passing strong electrick sparks through portions of common air, but it was effected with great labour and perseverance.

Five distinct compounds may, however, be produced by other means; and they admirably illustrate the change of properties conferred by composition in different, but multiple proportions. The first two belong to the class of oxides, not having any acid properties; and they may be called the protoxide and the deutoxide of nitrogen. The last three are acids.

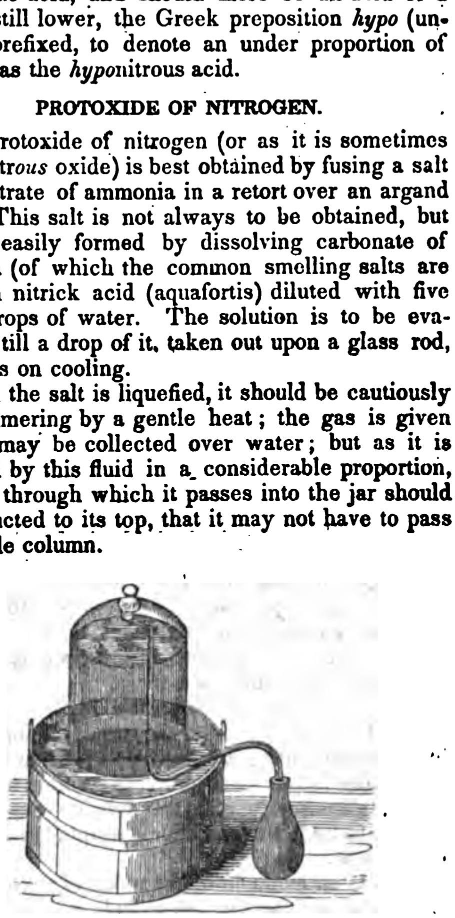
Now when a substance forms more than one acid combination with oxygen in different proportions, the chymical nomenclature distinguishes them as follows:—

The highest degree of oxygenation is marked by its name terminating in *ick*, as the nitr*ick* acid; that of the next degree is made to terminate in *ous*, as the nitr*ous* acid, and should there be an acid of a degree still lower, the Greek preposition *hypo* (under) is prefixed, to denote an under proportion of oxygen, as the *hypo*nitrous acid.

PROTOXIDE OF NITROGEN.

The protoxide of nitrogen (or as it is sometimes called nitr*ous* oxide) is best obtained by fusing a salt called nitrate of ammonia in a retort over an argand lamp. This salt is not always to be obtained, but is very easily formed by dissolving carbonate of ammonia (of which the common smelling salts are made) in nitrick acid (aquafortis) diluted with five or six drops of water. The solution is to be evaporated, till a drop of it, taken out upon a glass rod, concretes on cooling.

When the salt is liquefied, it should be cautiously kept simmering by a gentle heat; the gas is given off, and may be collected over water; but as it is absorbed by this fluid in a considerable proportion, the tube through which it passes into the jar should be conducted to its top, that it may not have to pass the whole column.



The protoxide of nitrogen is a colourless, elastick fluid, considerably heavier than common air, 100 cubick inches weighing 46.5 grains. It has a sweetish taste, and faint agreeable smell. Water dissolves about its own bulk of this gas. Animals, when wholly confined in it, die very speedily: it may, however, be breathed for a short time with impunity; and it has been found to produce a most extraordinary excitement in the human frame. The experiment may be tried, by filling a clean bladder with it, and inhaling it repeatedly through a pipe attached to a stop-cock. Care should be taken that the gas is very pure. The sensations which it produces have been variously described by different people, but all have agreed that they are very agreeable, and much resemble the exhilaration produced by spirituous liquors. It has mostly occasioned an irresistible propensity to laughter and muscular exertion, not followed by that depression and sense of lassitude which generally succeed excitement from fermented liquors.

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* From a Greek expression, signifying "privation of life."

This gas does not change the colour of blue vegetable infusions, and, therefore, is not acid.

Many substances, when introduced into it in a state of inflammation, burn with great splendour, from their superiour affinity for the oxygen, with which they combine, setting nitrogen free. The glowing wick of an extinguished taper is immediately kindled by it into flame.

Iron wire, and redhot charcoal, burn in it, with nearly the same splendour as in oxygen gas, but for a shorter time.

Phosphorus introduced into it, in a state of active inflammation, burns with great violence, almost approaching to explosion.

When mixed with hydrogen, it will detonate either by the application of flame, or of an electrick spark.

Two volumes of the protoxide require two volumes of hydrogen for their complete decomposition, and the residue is two volumes of nitrogen. The experiment may be tried in the apparatus previously described for the detonation of mixtures of oxygen and hydrogen.

Now, as two volumes of hydrogen are equivalent to the saturation of one volume of oxygen, we infer that the protoxide of nitrogen is composed of two volumes of nitrogen and one of oxygen, condensed into two volumes; and the specifick gravity of the gas confirms this influence, for the weight of

100 cubick inches of nitrogen is -	29.7 gas
and of 50 oxygen - - - - - -	16.8
Making the weight of 100 cubick inches of protoxide - - - -	46.5

as before stated from experiment.

The equivalent number of nitrogen is also deduced from the same *data*, for

16.8 : 29.7 : : 8 : 14,

that is to say, the number for oxygen being denoted by 8, that of nitrogen must be 14; these two numbers being in the same proportion (allowing for the unavoidable inaccuracies of delicate experiments) as 16.8 to 29.7, the combining weights in the above experiment.

This is an example of the mode of reasoning, by which the composition of a body may be deduced from the results of analysis; which, as the protoxide of nitrogen cannot be formed by the direct union of its elements, is the only means of ascertaining it in the instance before us. The method is objectionable, but the proof not so satisfactory as when we are able to confirm it by synthesis. When the two methods concur, the conclusion, which rests upon them, has all the certainty of a mathematical demonstration.

DEUTOXIDE OF NITROGEN.

The deutoxide of nitrogen (or, as it is sometimes denominated, nitr*ick* oxide) may be obtained from the action of nitrick acid (aquafortis) upon copper. The metal may be put into a retort, and the acid poured upon it, when a brisk effervescence will take place, and the gas may be collected in a jar in the water-bath.

It is a permanent elastick fluid, very sparingly soluble in water, and does not, when pure, act upon blue vegetable colours. It is wholly irrespirable. The flame of most bodies, as of a taper or sulphur, is instantly extinguished, by being immersed in it; but it parts with its oxygen to charcoal and phosphorus, if introduced in a state of vivid inflammation, and they burn in it with increased energy. It does not explode, when mixed with hydrogen, in proportion; but it colours its flame green, if burnt with it in the common air.

It is but little heavier than atmospherick air, 100 cubick inches weighing 31.7 grains. When mixed with oxygen gas, deep red fumes are generated; and if the experiment be made over water, a great absorption will ensue; and when the gases are perfectly pure, and mixed in the proper proportions, they entirely disappear. The same appearance takes place with atmospherick air, and the diminution upon mixture is proportionate to the quantity of oxygen which it contains. From this property of condensing oxygen, and no other gas, it has been much used in *eudiometry*, or for measuring the purity of atmospherick air, which was formerly supposed to depend upon a varying proportion of that gas.

In this process an acid is formed, as may be proved by the following experiment. Paste a slip of paper, stained with litmus, within a glass jar; and into the jar, filled with, and inverted over water, admit as much deutoxide of nitrogen, well washed by agitation with water, as will displace the water below the level of the paper. The blue colour will remain unchanged; but on admitting common air, or oxygen, it will be immediately reddened.

It may be decomposed by suffering it to stand over iron filings, which abstract a portion of its oxygen, and convert it into *prot*oxide of nitrogen.

Its composition has been accurately ascertained by burning charcoal in it, which combines with the whole of its oxygen, amounting to half its volume; and it leaves nitrogen to the amount of the other half. Hence we infer that it is composed of equal volumes of the two gases uncondensed; and that the volume of oxygen is exactly the double of that in the preceding compound. This result agrees exactly with its weight, for

	Grains.
50 cubick inches of oxygen weigh - - -	16.8
50 cubick inches of nitrogen weigh - - -	14.9
Making together - - - -	31.7

the weight of 100 cubick inches of the deutoxide as before stated from experiment.

Its composition, therefore, upon the scale of equivalent is,

1 equivalent of nitrogen	14
2 ditto of oxygen	16
	30

HYPONITROUS ACID.

The next combination, in order, of nitrogen with oxygen, the hyponitrous acid, is rather hypothetical (conjectural), inasmuch as it never has been exhibited in a detached form.

For its production, a mixture of deutoxide of nitrogen and oxygen must be made over mercury, instead of water, upon the surface of which a little solution of potash must float. The proportions must be 4 volumes of the former, and 1 of the latter. They combine together under these circumstances, and form an acid which immediately unites with the potash, but which cannot afterwards be separated from it without undergoing decomposition. It will not be necessary to say more upon this compound, and we only notice it as forming a link between the last and the next compound. We have seen that 4 volumes of the deutoxide are compound of

2 volumes of nitrogen,
2 volumes of oxygen,

and the additional volumes make 3 volumes of oxygen to 2 of nitrogen in the composition of hyponitrous acid, or in numbers,

1 proportion of nitrogen	14
3 ditto of oxygen	24
	38

NITROUS ACID.

The next compound is the nitrous acid, which may also be produced by adding oxygen to the deutoxide of nitrogen. The experiment will not succeed over water or mercury, but may be conducted in a glass retort, fitted with a stop-cock, from which the air has been extracted by an exhausting syringe. In this way a mixture may be made of 2 measures of the deutoxide, and 1 measure of oxygen, which will be condensed into half their volume, and form a deep orange-coloured gas: 2 volumes of the deutoxide are composed, as we have seen, of

1 volume of nitrogen, and
1 volume of oxygen,

and 1 volume of oxygen now added, form 2 volumes of oxygen to 1 of nitrogen in the composition of nitrous acid, or in numbers,

1 equivalent of nitrogen	14
4 ditto of oxygen	32
Equivalent of nitrous acid	46

A taper will burn in this gas, and phosphorus most vividly. Charcoal also burns in it with a dull red light.

Water dissolves it, and acquires a green tint, which changes to blue, and finally to yellow, as more of the gas is absorbed. The solution is sour, reddens litmus paper, and stains animal substances yellow. It has been called liquid nitrous acid; but with regard to this solution, there is some ambiguity to which we shall hereafter again refer.

No practically useful application has been made of any of these compounds.

NITRICK ACID

We have already mentioned that by laboriously passing electrick sparks, from a powerful machine, through a mixture of oxygen and nitrogen, some indications are obtained of an union between the two gases: the product is a small quantity of nitrick acid.

This acid may readily be produced by passing the deutoxide of nitrogen *very slowly* into oxygen gas, standing over water. By this operation, four volumes of the former combine with three of the latter; and the compound, therefore, must consist of 2 volumes nitrogen, and 5 volumes oxygen, or by weight of

1 equivalent of nitrogen	14
5 ditto of oxygen	40
Making the equivalent of nitrick acid	54

The acid as it is formed is absorbed by the water, and it is very doubtful whether it can be exhibited in an insulated state.

The liquid nitrick acid is of very great importance in the arts, and is used in large quantities. It is procured, for commerce, by distilling nitre with strong sulphurick acid: the product is an intensely acid liquid, which, when pure, is colourless, and when most concentrated has a specifick gravity of 1.15; that is to say, it is by half heavier than water. In this state it contains 25 per cent. of water; which is the least quantity with which it is known to exist, and is therefore a definite compound of

1 equivalent nitrick acid	54
2 ditto of water (9 X 2)	18
	72

which are in the same proportion to each other as 75 : 25. And we have before shown, in speaking of the union of oxygen with hydrogen, that the equivalent of water is 9.

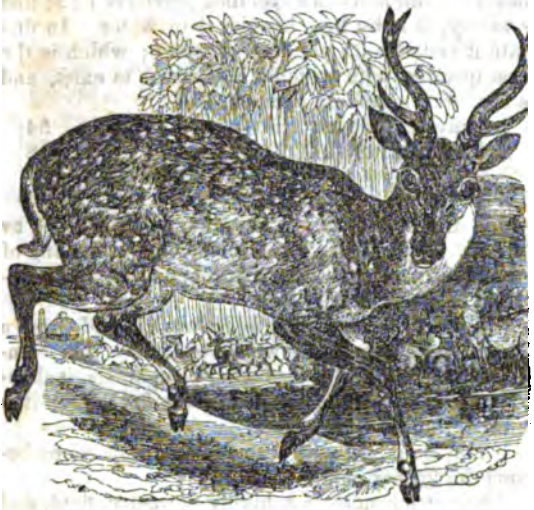
In this state it is called *hydro*-nitrick acid (from a Greek word, signifying water) to denote this combination. In entering into other compounds, it abandons the water and combines in the dry, or, as it is termed, the *anhydrous* state.

It may be *mixed* with water in any proportions beyond the 25 per cent.

The nitrick acid is a highly corrosive fluid, and acts as a powerful cautery when applied to the skin, which it stains of a permanent yellow. It is decomposed, with great violence, by most substances which have an affinity for oxygen; which element enters so largely into its composition. If it be brought into contact with hydrogen, at a high temperature, a violent detonation will be the consequence; but the experiment is dangerous, and should not be made without great caution. When poured upon warm, dry charcoal in powder, combustion ensues, with the emission of copious fumes of deutoxide of nitrogen. Spirits of turpentine may b inflamed by suddenly pouring nitrick acid upon it: the acid should be poured out of a phial attached to a long stick, or there would be danger to the eyes of the operator.

In reviewing these various compounds of oxygen and nitrogen, the mind cannot but be impressed with the wonderful nature of that species of attraction which, by such apparently simple means, as mere variations of proportion and approximation of particles of two bodies, can confer such essentially different properties upon nature! In the atmosphere by which we are surrounded, we are presented with an active principle, essential to the existence of life, but injurious in its pure state, diluted by measure and weight, with an inert fluid to the exact proportion which is most beneficial to animal existence. It is perpetually consumed and perpetually renewed; but never exceeds or falls short of its determined quantity. This bland, tasteless, inodorous, invisible mixture, in which we are perpetually immersed, and upon the maintenance of which our existence depends, by the mere approximation of its particles, in a manner to us mysterious, is capable of being converted into a poisonous, corrosive, suffocating red vapour, which would instantly destroy all organized matter. By approximating in other proportions, an intoxicating deleterious atmosphere would be produced; or compounds with other properties, but all destructive of life. Such affinities, it is clear, exist; but are happily restrained by the Great Legislator who framed the laws of nature.

NATURAL HISTORY.



THE AXIS DEER.

Cervus Axis. Erxl.

Far removed from the Rein-deer and other northern species of the genus in character and general appearance, the Axis forms the type of a tribe of Deer, inhabiting the warmer climates of Eastern Asia, and distinguished by the peculiar conformation of their horns. These appendages, in all the species of the Axis or Rusa tribe, are in their adult state furnished with no more than two simple branches or snags, the one originating from the stem near its base, and the other taking its rise considerably above the middle and forming with the continuation of the stem a kind of terminal bifurcation. The horns themselves are either perfectly sessile, or elevated only on short cylindrical processes. Notwithstanding their simplicity and the general uniformity of their character, they are subject to no little variation in the comparative size, length, and direction of their ramifications; and numerous species have been founded by authors, and in particular by M. Cuvier, and M. Blainville, on the most trifling modifications in these particulars. It is necessary to observe these animals for several successive years, in order to distinguish with precision the characters which are permanent from those which are of a temporary and transitory kind.

The Axis Deer is the earliest and best known species of the Indian group. In size, form, and the general distribution of its colours, it is extremely similar to the Fallow-Deer of Europe, with which it has frequently been compared. So close indeed is the resemblance, that it is sometimes difficult to distinguish between the females of the two races in their summer coat without a minute comparison. In the males the horns alone afford at the first glance a clear and unequivocal mark of distinction. These organs rise almost vertically from the head, take a slight curvature outwards, and turn a little forwards and inwards at their points. The lowermost antler or snag rises close to the base on the anterior surface, and is directed forwards and upwards; the upper takes its origin above the middle and from the inner side. The stems and their branches are perfectly cylindrical throughout, with a somewhat rugged and tubercular surface; and they never form the flattened and palmated expansions which distinguish those of the Fallow-Deer.

To the observations of M. G. Cuvier in the Paris Menagerie we owe an extended comparison between the Axis and spotted individuals of the Fallow-Deer. In both, the colour of the back and sides is fawn spotted with white; a deep brown or blackish band occupies the middle line of the back; and an almost continuous white line passes along either side of the belly between the limbs. But the head, which in the Fallow-Deer is of a uniform grayish brown, is marked in the Axis by a broad dusky spot on the forehead, and a line of the same colour extending along the middle of the nose. The chin and throat of the Axis are pure white, while in the Fallow-Deer they are of nearly the same colour with the chest and under surface of the body, which are both of a grayish hue. The buttocks of the Fallow-Deer are occupied by a broad white patch, separated from the fawn of the back and sides by a black band; and the tail is black above and white beneath. In the Axis the buttocks are of the same colour with the adjacent parts, and the tail is tawny above and white beneath, with a narrow blackish border towards the tip.

Such are the principal differences in colour between the most nearly approximating individuals of the two species; but it is only during the summer that any similarity exists, for the Fallow-Deer changes in winter to a uniform brown, while the Axis retains its spotted livery throughout the year. In form the most remarkable distinctions consist in the rather larger size of the Axis; in the somewhat more elongated and pointed shape of its head; and in the suborbital fissures, which are of large size in the Fallow-Deer, and are of little depth in the Indian species, in which their place is strongly marked by a patch of reddish hairs.

The Axis appears to be common in India and the larger islands of the Indian Archipelago, but is most abundant in Bengal and on the banks of the Ganges There can be little doubt that it is the animal mentioned by Pliny, under the name which was adopted from him by Belon, and employed for it by all subsequent writers. Considerable numbers have been brought to England during the last century, and have thriven extremely well in the menageries, and occasionally in open parks, propagating freely in captivity. It is even stated, on the authority of Peter Collinson, that a mixed progeny has been obtained between them and the Fallow-Deer. They are singularly mild and quiet in their disposition; but their gentleness is not unmixed with timidity, which often degenerates into suspicion. Pennant observes that their sense of smell is so acute that, although fond of bread, which they readily take from the hands of visiters, they will not touch it if it have been previously blown upon; and M. F. Cuvier tells us that they will not even accept it, if it have been much handled. This extreme sensibility of smell and squeamishness of palate is not, however, we may remark, confined to the Axis, but is common to the whole of the Deer and of the Antelopes also.

THE BURROWING-OWL AND PRAIRIE DOG.

[The following interesting account of the burrowing-owl is abridged from the splendid continuation of Wilson's "American Birds," By Charles Lucien Bonaparte.]

Venerable ruins, crumbling under the influence of time and vicissitudes of season, are habitually associated with our recollections of the owl; or he is considered as the tenant of sombre forests, whose nocturnal gloom is rendered deeper and more awful by the harsh dissonance of his voice. In poetry he has long been regarded as the appropriate concomitant of darkness and horrour. But we are now to make the reader acquainted with an owl to which none of these associations can belong; a bird that so far from seeking refuge in the ruined habitations of man, fixes its residence within the earth; and instead of concealing itself in solitary recesses of the forest, delights to dwell on open plains, in company with animals remarkable for their social disposition, neatness, and order. Instead of sailing heavily forth in the obscurity of the evening or morning twilight, and then retreating to mope away the intervening hours, our owl enjoys the broadest glare of the noon-tide sun, and flying rapidly along, searches for food or pleasure during the cheerful light of day.

In the trans-Mississippian territories of the United States, the burrowing-owl resides exclusively in the villages of the marmot or prairie dog, whose excavations are so commodious as to render it unnecessary that our bird should dig for himself, as he is said to do in other parts of the world, where no burrowing animals exist. These villages are very numerous, and variable in their extent, sometimes covering only a few acres, and at others spreading over the surface of the country for miles together. They are composed of slightly-elevated mounds, having the form of a truncated cone, about two feet in width at base, and seldom rising as high as eighteen inches above the surface of the soil. The entrance is placed either at the top or on the side, and the whole mound is beaten down externally, especially at the summit, resembling a much-used footpath.

From the entrance, the passage into the mound descends vertically for one or two feet, and is thence continued obliquely downwards, until it terminates in an apartment, within which the industrious marmot contracts, on the approach of the cold season, the comfortable cell for his winter's sleep. This cell, which is composed of fine dry grass, is globular in form, with an opening at top capable of admitting the finger; and the whole is so firmly compacted, that it might, without injury, be rolled over the floor.

It is delightful, during fine weather, to see these lively little creatures sporting about the entrance of their burrows, which are always kept in the neatest repair, and are often inhabited by several individuals. When alarmed, they immediately take refuge in their subterranean chambers; or, if the dreaded danger be not immediately impending, they stand near the brink of the entrance, bravely barking and flourishing their tails, or else sit erect to reconnoitre the movements of the enemy.

In all the prairie-dog villages the burrowing-owl is seen moving briskly about, or else in small flocks scattered among the mounds, and at a distance it may be mistaken for the marmot itself when sitting erect. They manifest but little timidity, and allow themselves to be approached sufficiently close for shooting; but if alarmed, some or all of them soar away and settle down again at a short distance; if further disturbed, their flight is continued until they are no longer in view, or they descend into their dwellings, whence they are difficult to dislodge.

The burrows into which these owls have been seen to descend, on the plains of the river Platte, where they are most numerous, were evidently excavated by the marmot, whence it has been inferred by Say, that they were either common, though unfriendly residents of the same habitation, or that our owl was the sole occupant of a burrow acquired by the right of conquest. The evidence of this was clearly presented by the ruinous condition of the burrows tenanted by the owl, which were frequently caved in, and their sides channelled by their rains, while the neat and well-preserved mansion of the marmot showed the active care of a skilful and industrious owner. We have no evidence that the owl and marmot habitually resort to one burrow; yet we are well assured by Pike, and others, that a common danger often drives them into the same excavation, where lizards and rattlesnakes also enter for concealment and safety. The owl observed by Viellot, in St. Domingo, digs itself a burrow two feet in depth, at the bottom of which its eggs are deposited on a bed of moss, herb-stalks, and dried roots.

The note of our bird is strikingly similar to the cry of the marmot, which sounds like *cheh, cheh*, pronounced several times in rapid succession; and were it not that the burrowing-owls of the West Indies, where no marmots exist, under the same sound, it might be inferred, that the marmot was the unintentional tutor to the young owl: this cry is only uttered as the bird begins its flight. The food of the bird we are describing appears to consist entirely of insects, as, on examination of its stomach, nothing but parts of their hard wing-cases were found.

The figure of the burrowing-owl is copied from C. Bonaparte's work, in which a representation of this singular bird was first given.

THE SEAL.

In the natural history of seals there is very much that yet remains to be elucidated. This need not surprise us when we consider the ignorance which exists concerning mammalia much more within our reach than these marine animals. We have not, indeed, as Cuvier remarks, the means, except by deduction and analogy, of ascertaining the habits of these half-amphibious animals, while procuring their sustenance at the bottom of the sea; nor have we often the opportunity of watching them, in an efficient manner, in their favourite haunts, the isolated sterile rock, or the most retired and deserted strand. We are, however, acquainted with the physical structure of the animal, and possess some knowledge of its character and habits.

The family of *Phocæ* includes a considerable variety of species, the distinguishing characteristicks of which it is not necessary to enumerate. We shall state the circumstances of structure and habit in which they all agree, unless otherwise mentioned. The form of the body of the seal bears a general resemblance to that of a fish. The short limbs are chiefly enveloped in the common integument, the part which appears externally serving the purpose of a fin or paddle. The hind feet are placed at the extremity of the body in the same direction with it, serving the purpose of a caudal fin; the fore feet also are adapted to swimming; and the toes in both the fore and hind feet are furnished with claws, and united by a membrane. Neither the thighs nor legs of either the fore or hind extremities are visible, which gives an appearance of extreme shortness to the limbs. This occasions the animals to crawl on land with great awkwardness and seeming difficulty; but they move easily and gracefully in the water. By means of their fore feet they can lay hold of objects with sufficient firmness to drag themselves up shores, and even on shoals of ice, however slippery they may be. Even on land they move with more quickness than their appearance would lead one to expect; so that it frequently happens that when they have been dangerously wounded, hunters are unable to overtake them before they get to the water's edge and throw themselves in.

The tail is very short, and is placed between the hind feet. Some of the species are furnished with external ears, while others have only small auditory orifices. The eyes are large and prominent; and the nostrils open or close at the will of the animal. The upper lip is provided with strong whiskers, and the body is usually covered with hair. The internal structure of seals is similar to that of land quadrupeds, and atmospherick respiration is therefore indispensable to their existence, though they are capable of remaining under water a long time. In the arctick regions seals are sometimes found under the ice at the distance of many miles from open water; and they then form circular breathing holes, even though the ice should be several feet thick. These openings are kept clear; but the surface is allowed to freeze over partially, so as to conceal them effectually, except from very experienced eyes. Cuvier remarks that the nostrils of the seal are seldom opened except when it is desirous of expelling the air from its lungs, or introducing fresh air. They then assume a circular form. Respiration in the seal is extremely unequal, and often performed after

GREENLAND SEAL HUNTING.

long intervals. There are generally from eight to ten seconds between each inspiration, and the operation is sometimes suspended for half a minute without apparent inconvenience. It would seem that the nostrils are habitually closed, and that the act of opening them is attended with some effort. The quantity of air, however, that enters the lungs must be considerable, to judge from the motion of the sides, and the air expelled at each respiration. The quantity of the air seems to compensate for the paucity of the inspirations; for few animals have more natural heat or a greater quantity of blood than the seal.

The dental system varies considerably in the different species, and would seem to indicate a corresponding diversity in their habits; but the form of the teeth and jaws shows them to be mostly carnivorous, and their food appears to consist generally of fish, crabs, and sea-birds, which they are able to surprise while swimming. The mastication, at least in the common seal, goes no farther than to reduce the prey to such dimensions as may render it barely capable of passing the larynx and œsophagus. To produce this effect they generally confine themselves to pressing the prey between their teeth, not so as to divide it in pieces, but merely to contract it in size. Sometimes they will tear their prey with their claws; but they are more frequently observed to swallow it entire, even when apparently too large for their mouths. Thus they are frequently compelled to raise their heads to facilitate the operation of deglutition, so that the weight of the aliments may contribute to make them slide into the œsophagus and stomach, and favour the efforts of the muscles. Nature has facilitated this operation, not only by providing the animal with the means of distending excessively all the parts through which the aliment must pass, but has also supplied them abundantly with a viscous saliva, which fills the mouth to such a degree, that during deglutition it escapes in long threads; and this is also observed to take place even when the seal only perceives its prey.

The females produce two or three young, generally in the winter season; continue to feed them for about a fortnight in the place where they were brought forth; and suckle them nearly in an upright position, resting on their hind legs. When the cubs have acquired sufficient strength to contend with the waves, the mother conducts them to the water, and teaches them to swim about in search of food. The attachment of seals to others of the same species, and especially to their own offspring, is highly interesting. When in danger, the safety of her cubs is the chief object of attention with the mother, and even when badly wounded she is often known to succeed in carrying them off to sea in her mouth. The male parent, particularly of the ursine seal, seems to take scarcely less delight in the young than the mother. While basking in the sun upon the shore, he eyes them with the greatest complacency, and expresses his satisfaction by licking and kissing them as they sport and tumble about, and engage in sham fights before him. Seals are many years in attaining their full growth, and Buffon is inclined to believe that the duration of their lives often extends beyond a century.

All the species of seal live in herds, or families, more or less numerous, along the shores of the sea, and are fond of sunning themselves, and of sleeping upon the beaches, rocks, or ice-banks. When they do this in situations in which they are apprehensive of danger, instinct, or perhaps we should say experience, has taught them to take the precaution to post a sentinel to give an alarm when he observes any thing to excite apprehension; besides which, the common seal, while thus reposing, raises its head at frequent intervals, and looks around to observe that all is safe within its range of vision. In situations where they rarely experience disturbance, they sleep very profoundly and are easily surprised. In Iceland, and perhaps elsewhere, the seal has also a useful friend in the great sea-gull. In that country, the sportsmen, who are usually well acquainted with the haunts of the seal, raise up little bulwarks to conceal their approach, or wait for them behind a rock; the gull, however, understands these approaches, and frequently baffles all the precautions of the hunter by flying over his head and screaming close to the seal. If the latter does not take the alarm, the bird strikes him on the head, and as soon as he slips into the water seems perfectly conscious that he is no longer in danger.

Fights sometimes occur between the different species, between different herds of the same species, and between some species and the bears. But seals are generally of a pacifick disposition: they avoid man when it is in their power to do so; but, when they have no other resource, defend themselves with a great deal of courage. They are in general very tenacious of life, and survive wounds which would kill most animals; but they are, on the other hand, much more easily despatched by blows on the head than most other quadrupeds. The size of the animal varies exceedingly in the different species. The full-grown bottle-nose seal measures from eleven to eighteen feet in length, and from seven to eleven in circumference; the length of the morse is from fifteen to eighteen feet, and that of the common seal is only from four to six feet. The flesh of some species is held in considerable estimation, while that of others is scarcely eatable, even by sailors long confined to salt food.

Few quadrupeds are more extensively diffused, in the different species, than the seals. They in general seem to prefer cold climates, but there is scarcely any sea on the shores of which they are not found. The appearance of the common seal is quite familiar on the northern and western shores of Scotland. Though properly a marine animal, the seal is found in fresh water lakes, as those of Baikal, Ladoga, and Onega; but in such situations it is of an unusually small size, but so fat as to appear almost a shapeless mass. Seals, indeed, become in general very fat. Their oil, as well as their skins, are important objects of commerce. The oil is pure, and adapted to all the purposes for which whale oil is used; and the skins are extensively employed by trunk-makers, saddlers, hatters, and others. Expeditions are fitted out from Europe and the United States for the sole purpose of catching seals. The Americans, in particular, annually visit the South Seas in search of these quadrupeds. A "sealing" voyage, with them, sometimes lasts three or more years, and the crews are exposed to very great hardships: they are often left in detachments upon small desert islands for months, for the purpose of hunting the animals to greater advantage; and years have sometimes elapsed before they have been able to obtain a release.

The seals are still more important to the natives of the barbarous countries on whose shores they are most abundantly found than to Europeans. The following account of the uses of the animal to the Aleutian islanders, from Langsdorff's Voyage round the world, is very generally applicable in such circumstances. "The animal forms such an essential article to the subsistence of the Aleutians in a variety of ways, that it may be truly said they would not know how to live without it. Of its skin they make clothes, carpets, thongs, shoes, and many household utensils; nay, their canoes are made of a wooden skeleton with the skin of the sea-dog (the common seal) stretched over it. The flesh is eaten, and of the fat an oil is made, which, besides being used as an article of nourishment, serves to warm and light their huts. The œsophagus is used for making breeches and boots, and the large blown-up paunch serves as a vessel for storing up liquors of all kinds. Of the entrails are made garments to defend them against rain, and they also serve instead of glass to admit light into their habitations: the bristles of the beard are used, like ostrich feathers in Europe, as ornaments for the head; there is, consequently, no part of the animal that is not turned to some use."

The hunting of seals is consequently prosecuted with great eagerness, and in various modes, by the Greenlanders, Finlanders, and others. The mode generally used by the former people is exhibited in our engraving. The Kamtschatkadales connect strong ideas of honour and glory with the hunting of the Maned seal. In the chase of a single animal they will expose themselves to the greatest dangers, wandering over the waves for days together without any other guide than precarious glimpses of the sun and moon; and he who kills the greatest number, either by blows of a long stick or with poisoned arrows, is regarded as the most heroick. As the adventurous sportsmen deem it disgraceful to leave any part of their game behind them, they sometimes overload their limber and crazy boats, and, disdaining to save their lives by relinquishing any portion of their highly-prized acquisitions, proudly perish with them in the waves.

PROPER NAMES.

Proper names were originally significant of mental or bodily qualities.

Sometimes, also, they were made to serve as memorials of circumstances connected with the birth of a child. Perhaps the last instance was the only one where such a practice could be consistent with reason, since the future character of no infant could ever be predicted at its birth.

History records one occasion, and one only, where such a prediction could be justifiable—the birth of Him who was by "ancient sages long foretold," and who was to be called "Immanuel."

PROPER NAMES INTERPRETED.

Aaron, a mountain. *Heb.*
Abel, vanity. *Heb.*
Abraham, the father of many. *Heb.*
Adam, red earth. *Heb.*
Alexander, help of men. *Gr.*
Alfred, all peace. *Sax.*
Ambrose, immortal. *Gr.*
Andrew, courageous. *Gr.*
Arthur, a strong man. *Brit.*

Basil, kindly. *Gr.*
Bennet, blessed. *Lat.*

Cesar, adorned with hair. *Lat.*
Caleb, a dog. *Heb.*
Cecil, dim. *Lat.*
Charles, noble spirit. *Germ.*
Christopher, bearing Christ. *Gr.*
Constantine, resolute. *Lat.*
Cyril, a little Cyrus.

Daniel, God is judge. *Heb.*
David, beloved. *Heb.*

Edmund, happy peace. *Sax.*
Edwin, happy, courageous. *Sax.*
Eugene, nobly descended. *Gr.*
Eustace, standing firm. *Gr.*

Francis, free. *Germ.*
Frederick, rich peace. *Germ.*

Geoffrey, joyful. *Germ.*
Gilbert, bright as gold. *Sax.*
Gregory, watchful. *Gr.*
Guy, the mistletoe herb. *Fr.*

Henry, rich lord. *Germ.*
Hugh, high, lofty. *Dutch.*
Humphrey, domestick peace. *Germ.*

Jacob, a supplanter. *Heb.*
John, the grace of God. *Heb.*
Jonathan, the gift of the Lord. *Heb.*
Joseph, addition. *Heb.*
Isaac, laughter. *Heb.*

Lawrence, crowned with laurel. *Heb.*
Lewis, the defender of the people. *Lat.*
Luke, a wood or grove. *Lat.*

Mark, a hammer. *Lat.*
Matthew, a gift. *Heb.*

Owen, well descended. *Brit.*

Patrick, a nobleman. *Lat.*
Paul, little, small. *Lat.*
Philip, a lover of horses. *Gr.*

Richard, powerful. *Sax.*
Robert, famous in counsel. *Germ.*
Stephen, a garland. *Gr.*
Thomas, a twin. *Heb.*

Walter, a wood-master.
William, defending many. *Germ.*

[Southern Rose Bud.

THE HOMOFERUS OF THE GULF.

From an unpublished Tale,

BY THOMAS ALLEN.

In the outskirts of one of the prettiest villages in the western district of the commonwealth of Massachusetts, is to be found a dark, deep, and terrifick ravine, cutting entirely through a branch of the Green Mountains. It is very appropriately appellated "The Gulf." It is hypothecated that its origin may be traced to some of those romantick fancy-freaks of nature, to which all the varieties of hill and dale that adorn the earth have been referred. A rough and circuitous road winds through the ravine, and the noise of a whip-crack—of the rattling of wheels—or of the rude song of the teamster, are not unfrequently heard reverberating through that wilderness place, till their echoes, leaping from rock to rock, are lost in the distance of the rugged heights. Generally, however, stillness prevails; and when some forlorn creature, beast or fowl, dares to mutter the comparative insignificance of its voice only adds to the completeness and sublimity of the dominion of the universal silence.

The whole place is rude and wild, and in the complete possession of its original superintendent, Nature. Huge, ponderous rocks rise on either side of the road, and impend over the terrified valleys; dark, deep-mouthed fissures and caverns yawn in their midst, and decayed trees and rubbish lay about in chaotick confusion, the remnants of the entangling and terrifick "windfall." Yonder, a monstrous pine, whose roots have found nutriment in the rocky fissures, has presumed to tower into the clouds. Here and there little rivulets trickle along down the rocks, icy cold, and clear as crystal, and uniting at the base, form a little brook that flows off, a "glad creature for the sea, and full of life."

"With boughs that quaked at every breath,
Gray birch and aspen wept beneath;
Aloft, the ash and warriour oak
Cast anchor in the rifted rock;
And, higher yet, the pine-tree hung
His scattered trunk, and frequent flung,
Where seemed the cliffs to meet on high,
His boughs athwart the narrowed sky."

A few dry, practical philosophers of the African hue, who had retired from the world, sick of its frivolous bustle, reluctant rewards and ill treatment, to live in this sequestered spot in log-cabins, rent-free and undisturbed, were the only human denizens of the vicinity. They were given over, however, to a vast deal of credulity and superstition. For, as we have heard it hinted, Ignorance living in solitude is a most prolifick mother of that last-mentioned affection.

The story of the Haunted Picture, or that tale which historicates the very singular conduct of the furniture of a garret in setting off into a rigadoon dance, at the delectable inspiration which an itinerant ghost blew out of an old pair of bellows, are the only examples, it strikes us, which will sustain any comparison with the diabolical witchcraft of which these inhabitants were wont to complain, to the neighbouring villages. Every happening, a little singular in its nature, was most indubitably the handicraft of a witch. Divers supernatural intonations, awful screeches and thrilling squeals, it is said, were heard in their vicinage during the season of slumber. One of the most corpulent men amongst them, had grown as lean and lank as a "ribb'd sand bar"—some people lost their hair—some cows their tails—some pigs the faculty of lying still without squealing—some chimney cap-stones their equilibrium—some shovels and tongs their perpendicularity—some tea-kettles their tears and sighs—some kittens their lives, and numerous other almost incredible inconveniences perplexed them, it is alleged, and all of which were debited to the unlawful practices of witches and wizards.

Bobby Allyn, whom the reader will not recollect as the main hero of our underplot, felt, numerically, great superstitious misgivings and dreary terrours crawling through *his* veins, when with "too credent ear" he listened to these rumours. And good reason why; Bobby's diurnal toil always led him, of a certainty, through the Gulf.

We find the aforementioned personage one cold, clear, tickling morning in January, just at the break of day, wending his steps through this terrifick mountain pass. He exhibited at every moment an extreme sensibility and maiden coyness; for the fellow's head was lumbered with images of Dutch spooks, English hobgoblins, and African devils. Every crack of a bough, every rattle of a tumbling stone or falling icicle, every caw of the high-flying crow, startled him into tremour and perspiration; and when he mounted a rail, the frosty thing would send such a hollow echo through the babbling forest, that his very blood would be nearly chilled with consternation.

He arrived, at length, to a point on the road that is darkly overshadowed. The noise of a singular step, cranching the dry sticks and dead leaves, suddenly grated on his terrified ear. Bobby Allyn, almost petrified with horrour, effected a decided halt.

> "Each particular hair stood on end,
> Like quills upon a fretful porcupine."

> "Et vox faucibus hæsit."

His present appearance, in a strictly technical description might be noted thus: form, erect; hair, bristled; eyes, dilate, globose; mouth and nostrils, distended, cavernous; tongue, flaccid; arms, brachiate; legs, divergent, rigid; brain, turbid; blood, frigid; general aspect, affrighted.

The object of Bobby's consternation, however, gradually withdrew, and the current of his ideas, as well as that of his blood, seemed to flow again. Becoming conscious of that fact, he immediately betook himself to that valour, which on occasions of huge affright, is ever found in the speed of one's heels. He ran nearly two miles, swifter than Crusoe ever chased a goat. And then,

> "Like wildfire o'er a mossy heath,
> The rumour through the hamlet ran;
> The peasants crowd at morning dawn,
> To hear the tale,—behold the man."

Bobby described the terrifick animal as possessed of the image of mankind, covered with brown hair, having one eye, like Cyclops, in the centre of his forehead; walk, erect, and carrying a mortal shillalah of hawthorn. The *savans* of the neighbouring village, after a protracted investigation, pronounced the animal an *Homoferus!* Class, *Mammalia*—Order, *Quadrumana*—Specifick genus. *Sylvæ Americanus*—*Anthropophagi unoculus, capillaceus.*

Every reader who is conscious that the soil he treads upon, was once covered with the trees of a savage wilderness, must also be aware that a war of unsparing extermination has always existed between Americans and all manner of wild beasts. Thus we account for the fact, that the spreading wonder that an *Homoferus* was prowling in the mountains, instantly aroused the destructive propensity of every Nimrod in that section of the steady Commonwealth. The Gulf, the horrifick abode of this ferocious animal, was immediately made the rendezvous of about two hundred warriours bold. It is regretful to record that some of them loaded their fire-arms with the fell determination of putting the poor animal to death—a post mortem examination was then to be executed, and subsequently, extermination, toto cælo. There were amongst them, however, some, who with more amiable motives had meditated the feasibility of taking him alive, and turning him into a menagerie. However, to proceed, every man of them, desirous of signalizing himself on the occasion, advanced with vigour and courage.

> "Yelled on the view the opening pack,
> Rock, glen and cavern paid them back;
> To many a mingled sound at once,
> The awakened mountain gave response."

Rocks, caves, dingles, hollow trees, logs, brush heaps, rubbish, in fact, all that forest gear underwent the strictest scrutiny of the keenest hunters. The uproar and the downroar was tumultuous and terrible

> "The owlets started from their dream,
> The eagles answered with their scream;
> Round and around the sounds were cast,
> Till echo seemed an answering blast."

They had at length "beaten every tack," probed every lurking place, and awakened every solitude. The fierce army, as is the custom in all similar hunts, had now encircled a hill, and were gathering to a central point at its apex, when the cry of "He's up! mark! mark!" ran through the awakened ranks. Rifles cracked, and queen's arms roared in arithmetical progression, till all was one tremendous, booming thunder. In the midst of this universal roar, a lean, emaciated woods-gray fox, *without a tail*, darted out of a hollow stump, near which Bobby Allyn had taken his station, and with a most frightful attempt to scream, quickly disappeared down the hill. The effect which the sudden appearance of this frightful image of a fox produced upon poor Bobby's nerves is indescribable. Suffice it to say, his musket fell from his nerveless arm; and as it fell, discharged itself into the air, while the unfortunate man was himself, at that very instant, the recipient of a missile of death from the misdirected aim of one of his companions.

The disappointed party gathered mournfully around the unfortunate victim, and placing the body upon a litter, moped quietly and sadly away;

"And silence settled, wide and still,
On the lone wood and mighty hill."

Reader! perhaps thou hast perused Miss Sedgwick's New England Tales. If thou hast given thyself that pleasure, thou art, peradventure, acquainted with one Crazy Bess. Thou mayst have been informed, that she was born to a goodly heritage of worldly estate, of personal beauty, of surpassing intelligence, of purest Christian virtues—that she was alike the pride of her friends, the ornament of her sex and the delight of a wide and extending circle.

That she possessed a very retentive memory, an acute discrimination, shrewd wit, keen sarcasm, and ready repartee, but an amiable disposition, and was every inch a lady. But thou must also have learnt, that she and all her race, were the unfortunate inheritors of the dire seeds of pitiable insanity. At that early age when hope is brightest, affection strongest, beauty loveliest, when talent begins to bloom and society to charm, she became the irrevocable victim of a wild, irremediable, constitutional insanity. Her health continued good, and she still retained her memory, sarcasm, repartee, and occasional wit, but the intellectual energies lost all concentrativeness; they were hurried on into a lawless unremitting whirl.

She is old and gray now—the pilgrim of the highway, the homeless wanderer of the fields and woods. Her face is deeply wrinkled, cheeks sunken, teeth dilapidated, and her hazel eye flashes under long gray eyebrows. You may see her by the road side, in her brown dress and hood, half a dozen vari-coloured shawls and perhaps red sash; supporting herself by a broken bough in one hand, and bearing roots, herbs, and evergreens in the other. She is familiar with the domestick matters of almost every family in the western country, brings dry sticks for the fire, sings sacred songs for the children, anathematizes the elders for their derelictions, admonishes priests of their duty, and quotes with astonishing facility the terrours of the law to sinners. She awes some people into subjection to her will, and is abused by others to a brutish extreme. One place never contains her more than one day or one night—the latter she spends sometimes in a house, sometimes in a manger, and at others it is impossible to divine where she slumbers. Not unfrequently, she disappears for an entire winter, and appears again in the spring as mysteriously as the wild woman of the Pyrenees. She seems happy, always cheerful, sometimes even humorous, and always healthy. Her hold upon life is indeed mysterious; her destiny unprophesied.

The reader may suspect that Crazy Bess was the Homoferus of the Gulf. We must confess that there are indeed, grounds whereon that suspicion may rest.

BIOGRAPHY.

JOHN MARSHALL,

Chief Justice of the United States.

This venerable and distinguished man died at Philadelphia on the sixth of July. In ill health, emaciated, and full of years, the event was not unexpected either to his friends or to himself. He had lived eighty years, and his valuable life has been identified with the most important events in our history. It cannot be denied, that as a soldier, a lawyer, a legislator, a historian, and lastly as Chief Justice of the Supreme Court of the United States, Mr. Marshall has exhibited pre-eminent talents, and sustained himself with enduring honour. His elevated qualifications for the Chief Justiceship, indeed his seeming natural adaptedness to that precise situation at the peculiar and important period when he was called to it, can be fully appreciated only by those who can understand the difficulties of framing a new, and indeed almost original system of National Jurisprudence adapted to an experimental government, and that government a Republick, and who can perceive the success of his labours in that undertaking, and understand the importance of their results. The office of Chief Justice of the United States is most difficult, most important, most responsible, and second only to the Presidency in every point of view. That Mr. Marshall has acquitted himself with distinguished honour in that station, the expressions of the Bar in the different parts of the country abundantly indicate.

"The Chief Justice," says the Philadelphia Inquirer, "was born in Virginia, on the 24th of September, 1755; and, as early as the summer of 1775, received a commission as lieutenant of a company of minute-men, and was shortly after engaged in the battle of the Great Bridge, where the British troops, under Lord Dunmore, were repulsed with great gallantry. He was subsequently engaged in the memorable battles of Brandywine, Germantown, and Monmouth, and, in 1780 obtained a license to practise law. He returned to the army shortly after, and continued in the service until the termination of Arnold's invasion.

"In the spring of 1782 he was elected a member of the State Legislature, and in the autumn of the same year, a member of the Executive Council, and married in 1783. In 1788 he was elected as representative of the city of Richmond in the Legislature of Virginia, and continued to occupy that station for the years 1789, 1790, 1791, and upon the recall of Mr. Monroe, as Minister from France, President Washington solicited Mr. Marshall to accept the appointment as his successor, but he respectfully declined. In 1799 he was elected and took his seat in Congress, and in 1800 he was appointed Secretary of War.

"On the 31st of January, 1801, he became Chief Justice of the Supreme Court of the United States, which distinguished station he continued to fill with unsullied dignity and pre-eminent ability, until the close of his mortal career. His biographer eloquently observes:—'What indeed strikes us as the most remarkable in his whole character, even more than his splendid talents, is the entire consistency of his publick life and principles. There is nothing in either which calls for apology or concealment. Ambition never seduced him from his principles—popular clamour never deterred him from the strict performance of his duty. Amid the extravagances of party spirit, he stood with a calm and steady inflexibility—neither bending to the pressure of adversity, nor bounding with the elasticity of success. He lived as such a man should live, by and with his principles. If we were tempted to say in one word in what he excelled all other men, we should say, in wisdom; in the union of that virtue, which ripened under the hardy discipline of principles, with that of knowledge, which constantly sifted and refined its old treasures, and as constantly gathered new. The Constitution, since its adoption, owes more to him than to any other single mind, for its true interpretation and vindication. Whether it lives or perishes, his exposition of its principles will be an enduring monument to his fame, so long as solid reasoning, profound analysis, and sober views of government shall invite the leisure, or command the attention of statesmen and jurists.'"

The following portrait of Chief Justice Marshall was drawn by a distinguished jurist, since deceased:

He was in his person tall, meager, emaciated, his muscles relaxed, and his joints so loosely connected as not only to disqualify him, apparently, for any vigorous exertions of the body, but to destroy every thing like elegance and harmony in his air and movements. Indeed, in his whole appearance and demeanour—dress, attitude, and gestures—sitting, standing, or walking—he was as far removed from the idolizing graces of Lord Chesterfield, as any other gentleman on earth. To continue the portrait: his head and face were small in proportion to his height; his complexion swarthy; the muscles of his face being relaxed, gave him the appearance of a man of eighty years of age. His countenance had a faithful expression of great good humour and hilarity; while his black eyes—the unerring index—possessed an irradiating spirit, which proclaimed the imperial powers of the mind that sat enthroned within.

This extraordinary man, without the aid of fancy, without the advantage of person, voice, attitude, gesture, or any of the ornaments of an orator, deserves to be considered as one of the most eloquent men in the world; if eloquence may be said to consist in the power of seizing the attention with irresistible force, and never permitting it to elude the grasp until the hearer has received the conviction which the speaker intends.

As to his person it has already been described His voice was dry and hard, his attitude in his most effective orations was extremely awkward; as it was not unusual for him to stand with his gestures proceeding from his right arm, and consisting merely in a vehement perpendicular swing of it from above the elevation of his head to the bar, behind which he was accustomed to stand.

As to fancy, if she held a seat in his mind at all, which I very much doubt, his gigantick genius trampled with disdain on all her flower-decked plants and blooming parterres. How, then, will you ask with a look of incredulous curiosity—how is it possible that such a man could hold the attention of an audience enchained through a speech of ordinary length? I will tell you.

He possessed an original and almost supernatural faculty, of developing the subject by a single glance of his mind, and detecting at once the very point on which the controversy depended. No matter what the question, though ten times more knotty than the "gnarled oak," the lightning of heaven is not more resistless than was his astonishing penetration. Nor did the exercise of it seem to cost him an effort. On the contrary, it was as easy as a vision. I am persuaded that his eyes did not fly over a landscape and take in its various objects with more promptitude and facility than his mind embraced and analyzed the most complex objects.

Possessing while at the bar this intellectual elevation, which enabled him to look down and comprehend the whole ground at once, he determined, immediately, and without difficulty, which side the question might be most advantageously approached and assailed; in a bad cause, his art consisted in laying his premises so remotely from the point directly in debate, or else in terms so generous and specious, that the hearer, seeing no consequences which could be drawn from them, was just as willing to admit them as not: but his premises once admitted, the demonstration, however distant, followed as certainly, as cogently, and as inevitably, as any demonstration in Euclid.

All his eloquence consisted in the apparently deep self-conviction, and emphatick earnestness of his manner: the correspondent simplicity and energy of his style, the close logical connexion of his thoughts, and the easy gradations by which he opened his lights on the attentive minds of his hearers.

BOTANY.

The twenty-four classes of Linnæus are called, according to the number of Stamens:—

1 Monandria.
2 Diandria.
3 Triandria.
4 Tetandria.
5 Pentandria.
6 Hexandria.
7 Heptandria.
8 Octandria.
9 Enneandria.
10 Decandria.
11 Dodecandria.
12 Icosandria.
13 Polyandria.
14 Didynamia.
15 Tetradinamia.
16 Monadelphia.
17 Diadelphia
18 Polyadelphia.
19 Syngenesia.
20 Gynandria.
21 Monesia.
22 Diœcia.
23 Polygamia.
24 Cryptogamia.

The orders are as under, depending on the Pistils:—

1 Monogynia.
2 Dygynia.
3 Trigynia.
4 Tetragynia.
5 Pentagynia.
6 Hexagynia.
7 Octagynia.
8 Enneagynia.
9 Decagynia.
10 Dodecagynia.
11 Polygnia.
12 Gymnospermia.
13 Angiospermia.
14 Silicalosa.
15 Siliquosa.
16 Polygamia equalis.
17 Polygamia. segregata.
18 Monogamia.
19 Monœcia.
20 Diœcia.
21 Triœcia.
22 Filices.
23 Musci.
24 Hepaticæ.
25 Algæ.
26 Fungi.

The only successful opponents of this system were the Jussieus, who promulgated a natural system, founded on the habits and affinities of plants; and this system is now generally adopted in France, and much respected throughout Europe and America.

The terms in botany are very numerous and complicated, and, though generally expressed in Latin, they have clear English synonymes.

25 terms are used in general description.

13 for state of vegetation.

68 divisions of particular descriptions; each subdivided into 400 discriminations, divided among the 68 divisions.

The anatomy and physiology of plants includes half as many more, and the classes and orders about 300 more.

Jussieu divides plants into three divisions: the acotyledons, when the seeds are destitute of lobes; the monocotyledons, with one lobe; and the dicotyledons, with two lobes. The first includes what Linnæus calls cryptogamia; the second is divided into three classes, of four orders, eight orders, and four orders. The dicotyledons are divided into eleven classes, containing seventy-eight orders.

The Linnæan system consists of twenty-four classes, and twenty-six orders, divided into 3,000 genera; the genera into 50 or 60,000 species; and the species into an almost infinite number of varieties. The twenty-four classes depend on the number of stamens, and the orders, on the number of pistils.

Botanists record 56,000 species of various plants; and 38,000 are to be found in catalogues.

The ultimate and proximate principles of all vegetation are oxygen, hydrogen, carbon, and occasionally nitrogen. The proximate principles depend on the proportion of those elements; as when the oxygen is in greater proportion than water, or less, or equal, or when there is nitrogen. This general division indicates acid vegetables, neutral vegetables, inflammable vegetables, and animal product. The first, where the acids prevail, is the acetick acid, the oxalick, citrick, tartarick, benzoick, camphorick, gallick, malick, suberick, succinick mellitick, saclactick, fungick, and kinick. These acids confer an acidulous character on all vegetables with which they are combined.

When the oxygen and hydrogen are combined in the same proportions as in water, the substance is not acidulous, but consists of sugar, gum, starch, wood, or lignin tannin, and what is called extractive.

When there is an excess of hydrogen, then unctious and inflammable bodies are generated, as fixed oil, volatile oil, resin, caoutchouck, camphor, and wax. In the division containing nitrogen is found vegetable gluten.

Vegetables contain in substance, acids, sugar, gum, mucus, jelly, starch, gluten, and five or six peculiar principals, as tannin, indigo, the bitter and narcotick principle, &c. They also yield oils, wax, resins, &c. In all about thirty-four several products.

Vegetables yield nine several acids: the oxalick in rhubarb; the tartarick in tamarinds, grapes, and mulberries; the citrick in oranges, lemons, and onions; the malick in apples, cherries, &c.; the gallick in elm, oak, &c.; the benzoick in balsamick trees; the prussick in laurel leaves, peach blossoms, and bitter kernels; phosphorick in barley, oats, &c.

NUTMEG.

The true *nutmeg*, as well as the clove, is a native of the Moluccas, or Spice Islands, but principally confined to the group, called the Islands of Banda, under the equator, where it bears blossoms and fruit at all seasons of the year. In their native country, the trees are almost always loaded with blossoms and fruit; and the latter is gathered at three different periods of the year; viz., in July, November, and April. The mace is there in July, when the nut is most abundant; in November it is superiour, but in April, both the nutmeg and the mace are in the greatest perfection, the season then being the driest. The outer pulpy coat is removed, and afterwards the mace; which, when fresh, is of a crimson colour, and covers the whole nut. The nuts are then placed over a slow fire, when the dark shell next the mace, and which coats the seed, becomes brittle; and the seeds, or nutmegs of commerce, drop out. They are then soaked in sea-water, and impregnated with lime; a process which answers the double purpose of securing the fruit from the attacks of insects, and of destroying the vegetating property. It also prevents the volatilization of the aroma. The mace is simply dried in the sun, and then sprinkled with salt water, when it is fit for exportation.

CLOVE.

The clove, *caryophyllus aromaticus*, is one of the most precious commodities of the East, and one of the most valuable in commerce. Almost every part of the plant is covered with minute dots or glands, which contain the essential oil that gives the aromatick odour to it. These abound in the substance of the germen, near the epidermis. The native country of the clove is the Moluccas, but its culture has extended to the East and West Indies. Formerly it was the staple commodity of Amboyna. It was introduced into the Kew gardens, England, by Sir Joseph Banks, at the close of the last century.

The clove of merchandise is the unexpanded flower; the corolla forming a ball or space on the top, between the teeth of the calyx; thus, with the narrow base or germen tapering downwards, giving the appearance of a nail; a similarity, indeed, more striking in the dry than in the fresh state of the bud. Hence the Dutch call it *naghel;* the Spaniards, *clavo*, the French, *clou*, from which the English *clove*, is evidently derived. In medicine cloves are used as stimulants, tonick and exhilarating; and they are used for the purpose of giving flavour to dishes and wines. The full-formed berries, which are about an inch long, pear-shaped, and of a violet colour, are sometimes preserved in sugar, and eaten after dinner, to promote digestion.

CINNAMON.

Cinnamon is brought chiefly from the Island of *Ceylon*, in India, and has now been many years in use, in Europe and America, as a pleasant spice. It is the bark of a species of laurel, remarkable with some other species, possessing similar properties, for its coriaceous leaf, marked with three strong nerves. It was originally found wild only, and in small quantities, at one part of the island; but when the Dutch obtained a settlement there, they cultivated it in large gardens or tracks. The extent of these plantations will be perceived, when it is stated that 400,000 lbs. were obtained from them, annually, and upwards of 25,000 persons were employed in the cinnamon business. The Dutch long had the monopoly of the article, and resorted to severe and even cruel measures to prevent the trade getting into other hands.

The cinnamon tree often grows to the height of twenty or thirty feet, and sends out large spreading branches. The leaves are first pendent, and of a delicate rose colour, afterwards they turn yellow, and then green. The flowers are borne in panicles, are small and white, partaking of the peculiar flavour of the tree. The fruit yields an oil, of which a kind of candles is made, which are used by the court, in the kingdom of Candy.

When the tree is three years old, it affords a shoot fit to yield bark; but eight years of growth are needful, before it can be freely cut. At ten or twelve years of age, the tree is strongest, and the plants, which grow in dry and rocky spots, produce the most pungent and aromatick bark. The shoots are cut when about an inch thick; they are barked and the epidermis scraped off. The bark is dried in the sun, when it curls, and the smaller is rolled within the larger. *Cassia*, in its botanical character, is little different from cinnamon. In quality, it is much inferiour, though often sold for it. It is commonly known under the name of Bastard Cinnamon.

CAMPHOR.

This tree or plant is a species of the Lameck, and is found in the East Indies; but the leaves do not exhibit the three strong parallel nerves of the Cinnamon and Cassia. The whole tree has the strong odour of Camphor, and this substance is obtained by the distillation of the roots and small branches. The article is often employed as medicine, as a cordial and stimulant. The camphor of Sumatra is found concreted in the clefts of the bark of other camphor trees. It is also found in China and Japan, but the former is more highly valued. The camphor of China and Japan, is more frequently imported into Europe, than that of Sumatra.

MELON.

The Melon, *abattichin.* This fruit is probably referred to in the Book of Numbers, xi. 5. Rev. Dr. Harris, in his Natural History of the Bible, says, "It is a *luscious* fruit, and so well known, that a description of it would be superfluous. It was highly esteemed in Egypt in ancient times, and much used by the common people, especially in the hot months. The earliest writers often speak of the melon of Egypt, as a rich and grateful fruit. But it is not confined to Egypt. It is found in most parts of Asia and Europe, though the species are various. The melon mentioned in the Book of Numbers, is probably the water-melon. It grows most abundantly on the banks of the Nile; and serves for meat, drink and medicine. This explains the regret expressed by the Israelites, for the loss of this fruit, whose pleasant liquor had often quenched their thirst, and relieved their weariness in their bondage; and would have been very grateful in a dry, scorching desert."

ESSAY ON THE EDUCATION OF FEMALE TEACHERS, FOR THE UNITED STATES.

BY CATHERINE E. BEECHER.

(*Continued from page* 64.)

Nor is it because parents, all of them, are so pre-eminently well qualified to understand and regulate the varieties of youthful character: a labour demanding such experience, wisdom, energy, perseverance and self-denial; nor because they have such entire leisure to discharge these duties; nor because they are so entirely free from all liabilities to indolence, excessive indulgence, and blind insensibility to the faults of their children; nor because they always so wisely and so faithfully fulfil all these duties, that they have no need of such co-operating influences, from those whose business it is to aid in the education of children.

Nor lastly, is it because there is any such essential difference in the religious opinions of the great Protestant sects, that religious and moral instruction cannot be introduced into publick schools without encroaching on the peculiarities of those who support them.

Those great principles of religious truth and moral duty in which all agree, are the only ones which are needed in the moral education of children at school.

All agree that the Bible is the true standard of right and wrong, and the only rule of faith and practice. All agree that the evidences of its Divine authority should be understood, and that its contents should be studied.

All agree that the Bible teaches that mankind are in danger of eternal ruin; that all have become sinful; that a way of pardon and salvation has been secured through the atoning sacrifice of the Redeemer; that whenever love to God, and the desire to do his will, is the regulating principle of the mind, men are prepared for heaven; and that without this character no happiness is to be hoped for in a future state: that no man will ever attain this character without supernatural aid from the Spirit of God; and that such influences are to be sought by prayer, and the use of the appropriate means of religious influence; that as the Bible is the standard of rectitude in all moral and relative duties, children are to be educated to understand its precepts, and urged by all the motives it presents to obey them.

There is not one of the eight largest Protestant denominations, that would refuse assent to any one of these positions; and these principles are all that need to be employed, in forming the moral and religious character of children at school. The points in which these sects differ, relate either to forms of church government, or to the rites of the church, or to the philosophy of religion; and these peculiarities never need be introduced into school, but can be taught by parents and religious teachers elsewhere.

But if any sects attach such importance to their own peculiarities, as to fear the influence of religious instruction exerted by those who differ from them on these points, they could institute schools, taught by persons of their own sects; and, though this might involve some dangers and some evils, yet there would be the counterbalancing good, which is often found to be the result of sectarianism: more would be accomplished in a good cause than would have been, had no such jealousy existed.

One thing is certain, if religious influences are banished from our national system of education, every denomination will be injured in its most vital interests. For one who would be proselyted by a sectarian teacher, ten would be ruined by the vice and irreligion consequent on the neglect of moral and religious influences.

Our schools must have these influences: but, whether it shall be by the united or by the separate action of religious sects, is a matter of secondary consequence.

The reasons for the neglect of moral and religious education at schools, are, in the first place, the fact, that intellectual superiority has too high a relative estimation in society. Men do award to genius and knowledge an estimation not rendered to amiable character, true virtue, and sincere piety.

Another reason is, that mankind are not aware how much might be effected by teachers, in the most important part of education, were they properly trained for these duties, and allowed sufficient time and opportunity for the discharge of them.

Another reason is, that, to a very wide extent, teachers are not qualified for such duties,—do not know how to undertake them, and do not understand or feel their obligation, on this subject.

And the last reason is, that such are the present systems of education, so many pupils are given to the care of one person, and so great a variety of branches are to be taught by a single individual, that, in most cases, it is utterly impossible for teachers to attempt properly to discharge their most important duty, without so neglecting what parents consider the *only* business of a teacher, as to occasion dissatisfaction, and the removal either of teacher or pupils.

Until publick sentiment is so changed, that teachers shall be educated for their profession, and parents are willing to pay the price for such a division of labour as will give time and opportunity for the discharge of their most sacred duties, it is desirable that conscientious teachers should realize how much is left undone, in moral education, that might be accomplished.

In regard to education, the world is now making experiments, such as were never made before. Man is demanding disinthralment, alike from physical force, and intellectual slavery; and, by a slow and secret process, one nation after another is advancing in a sure though silent progress. Man is bursting the chains of slavery, and the bonds of intellectual subserviency; and is learning to think, and reason, and act for himself. And the great crisis is hastening on, when it shall be decided whether disinthralled intellect and liberty shall voluntarily submit to the laws of virtue and of heaven, or run wild to insubordination, anarchy, and crime. The great questions pending before the world, are simply these: are liberty and intelligence, without the restraints of a moral and religious education, a blessing, or a curse? Without moral and religious restraints, is it best for man to receive the gift of liberty and intelligence, or to remain coerced by physical force, and the restraints of opinions and customs not his own?

The master-spirits of the age are watching the developments as they rise, and making their records for the instruction of mankind.

And what results are already gained? In England, the experiment has been made by the skeptical Brougham; and, at great expense, knowledge has gone forth with increasing liberty, and all who have witnessed the results are coming to the conviction, that increase of knowledge, without moral and religious influence, is only increase of vice and discontent. And what are the results of the experiments in France? The statisticks of education show, that the best educated departments are the most vicious, and the most ignorant are the freest from crime. And, in that country, where the national representatives once declared that Christianity should be banished, and the Bible burnt, and the Sabbath annihilated, we now find its most distinguished statesmen and citizens uniting in the publick declaration, that moral and religious education must be the foundation of national instruction. Victor Cousin, one of the most distinguished philosophers of the age, and appointed by the king of France to examine the various systems of education in Europe, has reported, as the result of his investigations, that education is a blessing, just in proportion as it is founded on moral and religious principles.

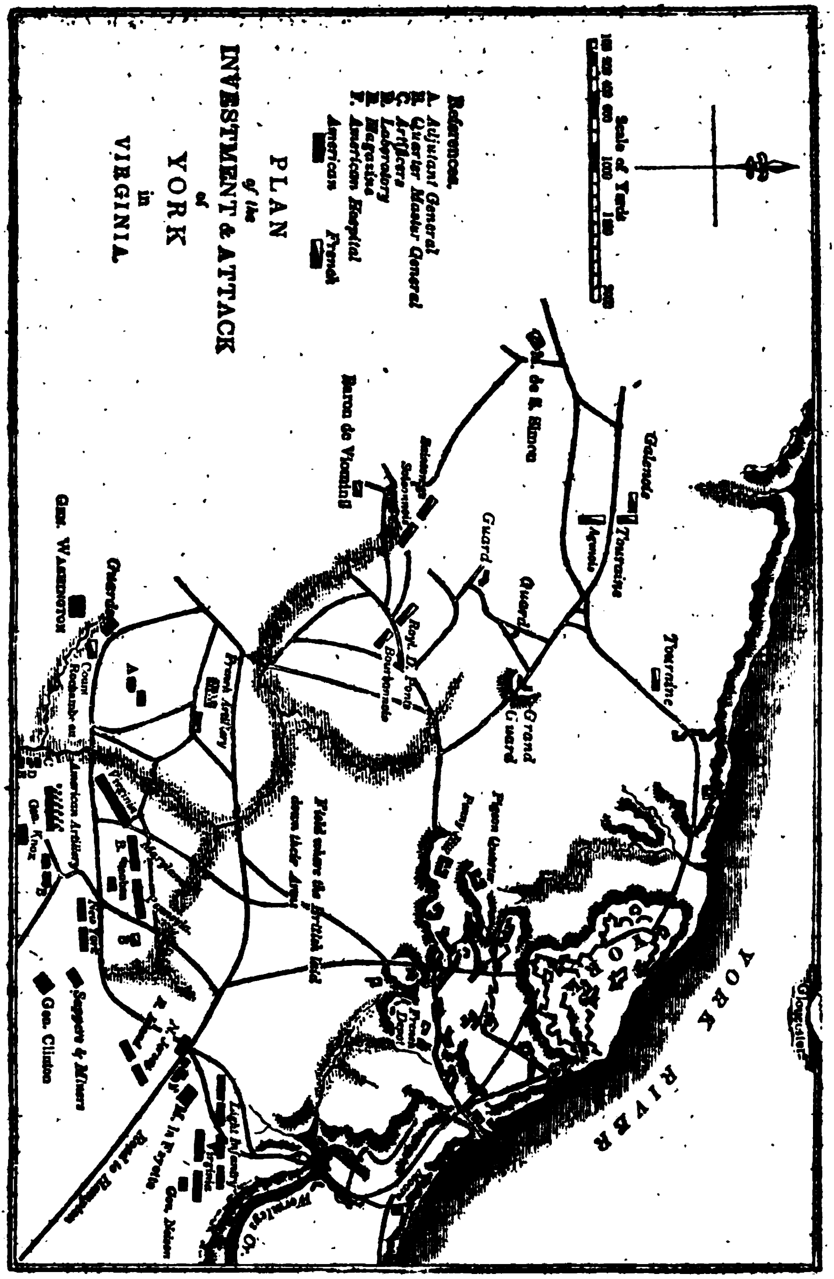
Look, again, at Prussia! with its liberal and patriotick monarch, with a system of education unequalled in the records of time, requiring by law that all the children in the nation be sent to school, from the first day they are seven years of age, till the last day they are fourteen, with a regular course of literary and scientifick instruction, instituted for every school, and every teacher required to spend three years in preparing for such duties; while, on an average, one teacher is furnished for every ten pupils through the nation. The effects of merely intellectual culture soon convinced the monarch and his counsellors that moral and religious instruction must be the basis of all their efforts; and now the Bible is placed in every school, and every teacher is required to spend from one to two hours each day, in giving and enforcing instruction in all the duties of man towards his Creator, towards constituted authorities, and towards his fellow-men.

And what is the experience of our own country? Those portions of the nation, most distinguished for the general diffusion of education, are those in which moral and religious influences have been most extensively introduced into schools, and have pervaded all the institutions of society. But, in those portions of our country the increase and jealousy of religious sects, and other combining causes, have had an influence in banishing the Bible, and moral and religious influence, more and more from publick schools. And now we hear the widely-extended complaint, that common schools are dangerous places for children; while parents, who are most regardful of the moral influences exerted upon their children, are more and more withdrawing them from what they deem such contaminating influence.

Thus, in those parts of our country which have been most moral and intelligent, the education of the lower classes is deteriorating, as it respects moral and religious restraints, while the statisticks of education, coming from other parts of the nation, are most appalling. We find that in one of our smallest middle states, thirty thousand adults and children are entirely without education and without schools. In one of the largest middle states, four hundred thousand adults and children are thus destitute. In one of the best educated western states, one-third of the children are without schools; while it appears, that, in the whole nation, there are a million and a half of children, and nearly as many adults, in the same deplorable ignorance, and without any means of instruction. At the same time, thousands and thousands of degraded foreigners, and their ignorant families, are pouring into this nation at every avenue. All these ignorant native and foreign adults are now voters, and have a share in the government of the nation. All these million children, in a very few years, will take the same stand; while other millions, as ignorant and destitute, are hastening in their rear. What is the end of these things to be? How long will it take, at this rate, for the majority of votes, and of the physical force of the nation, to be in the hands of ignorance and vice? That terrifick crisis is now before us; and a few years will witness its consummation, unless such energetick and persevering efforts are made as time never saw.

(*Concluded in our next.*)

All animals display varied and strong intelligence, but we notice most those acts which resemble our own. Thus, the species of the motacilly, called the tailor-bird, astonishes by sewing two leaves together with vegetable fibres as with a needle and thread, for its nest. The nightingale, wren, robin, &c. are other species.



REVOLUTIONARY BATTLES ILLUSTRATED. No. 3.

CAPTURE OF CORNWALLIS, 1781.

The Revolutionary war was closed by the capture of Cornwallis, at Yorktown, on York river, Virginia. He had just returned from Carolina, and now hoped to subdue Virginia. But in September, the Americans and French, under Washington, surrounded him from all quarters on land; while the French fleet in the Chesapeake Bay blocked up the mouths of the rivers, and shut out the English. Clinton was at New York; but it was impossible for him to reinforce Cornwallis. Washington had harassed Clinton all summer, and induced him to believe that he was to be besieged in New York. On the 24th of August, Washington left his camp on the Hudson, and marched through New Jersey and Pennsylvania, to the head of the Chesapeake The French Admiral De Grasse, who had just arrived, carried the American forces down the bay to Yorktown

The army passed through Philadelphia in a line more than two miles long, and in very splendid style. The streets were filled with crowds, and the windows to the highest stories with ladies, all cheering on the troops with immense applause. Washington, with all his generals; the French Count Rochambeau, with all his; General Knox, with one hundred cannon; and the whole army, pressing on with proud steps and a noble confidence, presented a most magnificent spectacle. In the midst of this scene, news came, that the French fleet had arrived in the Chesapeake. The whole city rang with the notes of the general joy, and all seemed inspired with confidence in a certain victory.

Cornwallis was completely invested by the 7th of October. He had raised intrenchments; but the Americans and French had erected breast-works all about him, and now opened their batteries. They fired day and night. The roar was terrible. The ground, for miles, shook with it; and the bombs and shells were seen whirling and crossing each other in the dark sky, and blazing like comets. If they fell upon the ground, it was torn up for a rod around, and dozens were killed when they burst. The bombs sometimes went over the heads of the enemy, and fell among the British works at Gloucester Point on the other side of the river. The water spouted in columns as they fell. One night, an attack was made upon two redoubts, which the British had built out so far, that they stood in the way of some American works just building around them. The French were ordered to take one redoubt, and the Americans under Lafayette, the other. The two parties tried to outdo each other. Lafayette carried his redoubt first, however, and sent his aiddecamp to the leader of the French party, through all the fire of the batteries, to tell him he was in. "So will I be," said the Frenchman, "in five minutes;" and he performed his promise.

Cornwallis surrendered on the 19th. His army, of about seven thousand men, marched out, at two o'clock, and passed between the American line on one side, and the French on the other, stretched out for more than a mile. They were dressed in their most splendid uniforms, with colours flying, and accompanied with fine musick. The English, carrying their colours bound up, marched with a slow and solemn step. The English general rode up to Washington at the head of the line, and excused the absence of Cornwallis, who feigned sickness. Washington pointed him politely to General Lincoln, and the latter directed him to a large field a little on the south, where the whole British army laid down their arms, and were led away prisoners.

The following article which we extract from a late number of Blackwood's (English) Magazine, describes the consternation of the British ministry when they received the intelligence of the capture of Cornwallis:—

"During the month of November, the accounts transmitted to Government of Lord Cornwallis's embarrassments, augmented the anxiety of the Cabinet. Lord George Germaine, in particular, conscious that on the prosperous or adverse result of that expedition hinged the result of the American contest, and his own fate, as well as, probably, the duration of the Ministry itself, expressed to his friends the strongest uneasiness on the subject. The meeting of Parliament stood fixed for the 27th of the month. On the 25th, about noon, the official intelligence of the surrender of the British forces at Yorktown, arrived at Lord Germaine's house. Lord Walsingham, who, previous to his father, Sir William de Grey's elevation to the peerage, had been under secretary of state in that department, and who was to second the address in the House of Lords happened to be there when the messenger brought the news. Without communicating it to any person, Lord George, for the purpose of despatch, immediately got with him into a hackney coach, and drove to Lord Stormont's residence in Portland Place. Having imparted the disastrous information to him, and taken him into the carriage, they instantly proceeded to the Chancellor's house in Great Russel street, Bloomsbury, whom they found at home; when, after a short consultation, they determined to lay it themselves in person before Lord North. He had not received any intimation of the event when they arrived at his door in Downing street between one and two o'clock. The first minister's firmness, and even his presence of mind, gave away for a short time under this disaster. I asked Lord George afterwards how he took the communication. 'As he would have taken a ball in his breast,' replied Lord George. He opened his arms, exclaiming wildly, as he paced the apartment during a few minutes, 'O God, it is all over;' words which he repeated many times under emotions of deepest agitation and distress.

"Military affairs have since displayed themselves on a broader scale, and we can scarcely conceive that such notions of national calamity could be appended to the capture of a force which, however brave, scarcely amounted to the vanguard of a modern army, certainly not to the twentieth of the army with which Wellington appeared on the frontier of France. The misfortune of the troops under Cornwallis was unquestionable, but their character was unstained; they had been brought by their commander into a cul de sac, where, it is true, they might have held out for ever, if they could have received supplies by sea. But that contingency was too delicate to have been relied on by an officer of any intelligence. The result proved the fact. The French fleet took up the position which Lord Cornwallis's imaginary plan had marked out for the British. The army within Yorktown found, that though to Americans they were impregnable, they had a more formidable enemy, famine, to deal with; and finally, to that enemy, and that enemy alone, they surrendered.

"We next have a picture of a Cabinet Council in terrour. When the first agitation had subsided, the four ministers discussed the question, whether it might not be expedient to prorogue the meeting of Parliament for a few days; but as scarcely an interval of forty-eight hours remained before the appointed time of meeting, and as many members of both Houses had arrived in London, or were on their way, the proposition was abandoned. It became, however, indispensable to alter, and almost remodel the King's speech. This was done without delay, and at the same time Lord George, as secretary for the American department, sent off a despatch to the King, then at Kew, acquainting him with the fate of Lord Cornwallis's expedition.

The narrative proceeds:—"I dined that day at Lord George's, and although the information which had reached London in the course of the morning from France, as well as from the official report, was of a nature not to admit of long concealment, yet it had not been communicated to me or any other individual of the company when I got to Pall Mall, between 5 and 6 o'clock. Lord Walsingham, who also dined there, was the only person, except Lord George, acquainted with the fact. The party, nine in number, sat down to the table. I thought the master of the house appeared serious, though he manifested no discomposure. Before dinner was over a letter was brought back by the messenger who had been despatched to the King. Lord Walsingham, to whom he exclusively directed the observation—'The King writes,' said he, 'just as he always does, except that I observe, he has neglected to mark the hour and minute of his writing with his usual precision.' This remark, though calculated to awaken some interest, excited no comment; and while the ladies, Lord George's three daughters, remained in the room, we repressed our curiosity. But they had no sooner withdrawn, than Lord George having acquainted us that information had just arrived from Paris of the old Count Maurepas, first minister, lying at the point of death; 'It would grieve me,' said I, 'to finish my career, however far advanced in years, were I first minister of France, before I had witnessed the termination of this great contest between England and America.' 'He *has* survived to see that event,' replied Lord George Germaine, with some agitation.

"The conversation was prolonged until, on the mention of the Virginia campaign, the minister disclosed the full bearing of the intelligence. 'The army has surrendered, and you may peruse the particulars of the capitulation in that paper.' The paper was taken from his pocket, and read to the company. The next question was one of rather an obtrusive kind, to see what the King thought on the subject. The narration states the minister's remark, that it did the highest honour to his Majesty's firmness, fortitude, and consistency. But this was a complying moment, and we are told that the billet was read to this effect: 'I have received, with sentiments of the deepest concern, the communication which Lord George Germaine has made to me, of the unfortunate result of the operations in Virginia. I particularly lament it on account of the consequences connected with it and the difficulties which it may produce in carrying on the publick business, or in repairing such a misfortune. But I trust that neither Lord Germaine, nor any other member of the Cabinet will suppose that it makes the smallest determination in those principles of my conduct, which have directed me in the past time, which will always continue to animate me under every event, in the prosecution of the present contest.'

"The Cabinet, strengthened by the royal determination, now recovered courage; they met Parliament at the appointed time, and fought their battle there with unusual vigour. Perhaps in all the annals of senatorial struggle there never was a crisis which more powerfully displayed the talents of the Commons. Burke, Fox, and Pitt, were at once seen pouring down the whole fiery torrent of declamation on the Government. The characteristick distinctions of their publick speaking gave a new vividness and force to their assault upon the strong holds of the ministry. Fox's passionate personality hurled the fiercest invective against the ministry, the court, and, fatally for his own ambition, the King. Burke's vast grasp gathered materials of charge from all quarters, and all subjects and heaped them alike, strong and weak, on the devoted heads of the culprit Cabinet. Pitt, with keener sagacity, for both the present and the future, tore up the frame of the ministerial policy, spared persons, avoided all insult to the monarch, but with the copious and superb combination of fact and feeling, argument and appeal, which from that period was adopted as his great parliamentary weapon, and which was made to give him matchless superiority in a deliberate assembly, swept all before him with a 'two-handed sway,' and where he smote, left nothing for friends or enemy to combat or defend after him.

"These efforts failed of overthrowing the Cabinet at the time; but there can be no question that they hastened that precipitate fall which was so speedily afterwards to surprise the nation. The assault had terrified the garrison, and shaken the battlements to a degree which made the result of the next attack secure."

GEOLOGICAL HISTORY OF THE CREATION.

By far the most interesting portion of geological inquiry relates to the inference derived from the situation and composition of the strata and remains of animals and vegetables that are imbedded in them. This investigation discloses a valuable history in our earth, a history in its very nature indisputable and written in characters so simple, that he who runs may read.—When we discover in the middle of a continent, the relicks of myriads of animals of the shell-covered tribes, that dwell in the sea, what proof more conclusive can we require, that the waves of the ocean once covered the spot? When we see imbedded in a rocky mass, the trunks of trees deprived of their branches, and broken and torn, and the bones and mangled forms of fish and other animals, who can avoid the conviction that these are the monuments of a terrible catastrophe which carried with it death and destruction? In some of the strata we find positive demonstration; and equally conclusive is the evidence presented by others, that they were the results of causes, sudden and rapid in their operation. In comparing the order of their formation with the remains of vital existence entombed in this strata, every one must be convinced that there was a day when the waters covered the face of the earth—that at a subsequent period the lower orders of the animal creation started into being—that the most perfect tenants of land began their existence at a later day—and that man was the last creature into which was breathed the breath of life.

A MORAL TAUGHT BY A FLOWER.

From the Asiatick Journal.

One morning in the grassy lane,
 A primrose fair I spied;
The linnet's meek and tender strain
 Rose sweetly by its side.

But in the soft declining eve,
 Again I pass'd that quiet spot,
How could I choose but stand and grieve
 To find the simple flower—was not!

And in the fate of that fair thing
 An emblem of my hope I found:
The morning saw it flourishing—
 The evening, wither'd on the ground.

SCENERY ON THE MISSISSIPPI.

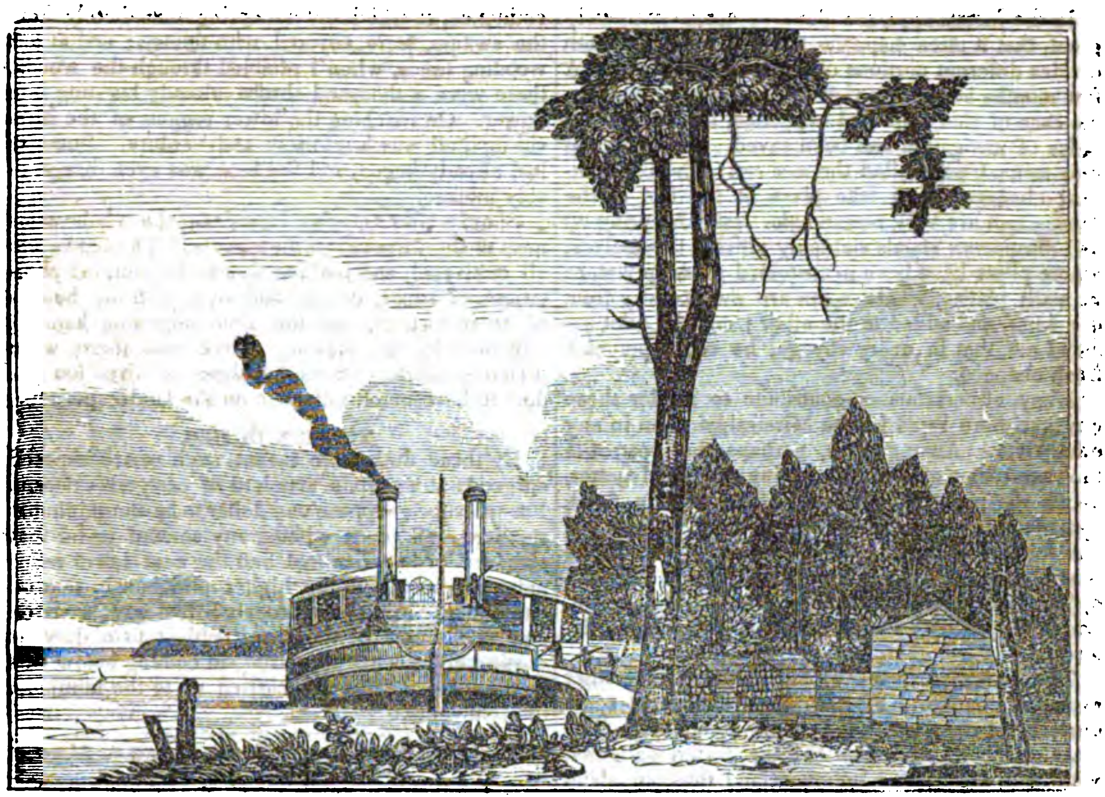
THE MISSISSIPPI OVERFLOWING ITS BANKS.

It certainly appears strange that the Mississippi, after absorbing the Ohio, presents no visible augmentation of its volume. Below the point of junction, the river is not broader than the Ohio alone. Though flowing in the same channel, the streams are not mingled. For many miles there is a distinct line of demarcation between the waters of the two rivers. Those of the Ohio are clear, while the stream of the Mississippi is ever dark and turbid. When the Mississippi is in flood, it almost dams up the Ohio, and suffers it to occupy but a small portion of the common channel.

After quitting *la belle riviere*, as the French first designated the Ohio, one feels as if he had made an exchange for the worse. The scenery of the Mississippi is even less varied than that of the Ohio. It is almost uniformly flat, though in the course of twelve hundred miles, a few bluffs and eminences do certainly occur. The wood grows down to the very margin of the river; and the timber, for some hundred miles, is by no means remarkable for size. As the river descends to the southward, however, it is of finer growth; and about latitude 30°, vegetation becomes marked by a degree of rankness and luxuriance which I have never seen any where else.

The American forests are generally remarkable for the entire absence of underwood, so that they are easily penetrable by a foot-traveller, and generally, even by a mounted one. But, in the neighbourhood of the Mississippi, there is, almost uniformly, a thick undergrowth of cane, varying in height from four or five to about twenty feet, according to the richness of the soil. Through this thicket of cane, I should think it quite impossible to penetrate; yet, I have been assured, the Indians do so for leagues together, though by what means they contrive to guide their course, where vision is manifestly impossible it is not easy to understand.

It has been the fashion with travellers, to talk of the scenery of the Mississippi as wanting grandeur and beauty. Most certainly, it has neither. But there is no scenery on earth more striking. The dreary and pestilential solitude, untrodden, save by the foot of the Indian; the absence of all living objects, save the huge alligators, which float past, apparently asleep, on the drift-wood; and an occasional vulture, attracted by its impure prey on the surface of the waters; the trees, with a long and hideous drapery of pendent moss, fluttering in the wind; and the giant river, rolling onward the vast volume of its dark and turbid waters through the wilderness, from the features of one of the most dismal and impressive landscapes on which the eye of man ever rested. Rocks and mountains would add nothing of sublimity to the Mississippi. Pelion might be piled on Ossa; Alps on Andes: and still to the heart and perceptions of the spectator, the Mississippi would be *alone*. It can brook no rival, and it finds none. No river in the world drains so large a portion of the earth's surface. It is the traveller of five thousand miles, more than two thirds of the diameter of the globe. The imagination asks, whence come its waters, and whither tend they?



AMERICAN STEAMER AT A WOODING STATION ON THE MISSISSIPPI.

They come from the distant regions of a vast continent, where the foot of civilized man has never yet been planted. They flow into an ocean yet vaster, the whole body of which acknowledges their influence. Through what varieties of climate have they passed? On what scenes of lonely and sublime magnificence have they gazed? In short, when the traveller has asked and answered these questions, and a thousand others, it will be time enough to consider how far the scenery of the Mississippi would be improved by the presence of rocks and mountains. He may then be led to doubt whether any *great* effect can be produced by a combination of objects of discordant character, however grand in themselves. The imagination is, perhaps, susceptible but of a single powerful impression at a time. Sublimity is uniformly connected with unity of object. Beauty may be produced by the happy adaptation of a multitude of harmonious details; but the highest sublimity of effect can proceed but from one glorious and paramount object, which impresses its own character on every thing around.

The prevailing character of the Mississippi is that of solemn gloom. I have trodden the passes of Alp and Appenine, yet never felt how awful a thing is nature, till I was borne on its waters, through regions desolate and uninhabitable. Day after day and night after night, we continued driving right downward to the south; our vessel, like some huge demon of the wilderness, bearing fire in her bosom, and canopying the eternal forest with the smoke of her nostrils. How looked the hoary river-god, I know not; nor what thought the alligators, when awakened from their slumber by a vision so astounding. But the effect on my own spirits was such as I have never experienced before or since. Conversation became odious, and I passed my time in a sort of dreamy contemplation. At night, I ascended to the highest deck, and lay for hours gazing listlessly on the sky, the forests, and the waters, amid silence only broken by the clanging of the engine. All this was very pleasant; yet, till I reached New Orleans, I could scarcely have smiled at the best joke in the world; and as for raising a laugh,—it would have been quite as easy to square the circle.

The navigation of the Mississippi is not unaccompanied by danger, rising from what are called *planters* and *sawyers*. These are trees firmly fixed in the bottom of the river, by which vessels are in danger of being impaled. The distinction is, that the former stand upright in the water, the latter lie with their points directed down the stream.

The bends or flexures of the Mississippi are regular in a degree unknown in any other river. The action of running water, in a vast alluvial plain like that of the basin of the Mississippi, without obstruction from rock or mountain, may be calculated with the utmost precision. Whenever the course of a river diverges in any degree from a right line, it is evident that the current can no longer act with equal force on both its banks. On one side the impulse is diminished, on the other increased. The tendency in these sinuosities, therefore, is manifestly to increase, and the stream which hollows out a portion of one bank, being rejected to the other, the process of curvature is still continued, till its channel presents an almost unvarying succession of salient and retiring angles.

In the Mississippi, the flexures are so extremely great, that it often happens that the isthmus which divides different portions of the river gives way. A few months before my visit to the south, a remarkable case of this kind had happened, by which forty miles of navigation had been saved. The opening thus formed, was called the *new cut*. Even the annual changes which take place in the bed of the Mississippi are very remarkable. Islands spring up and disappear; shoals suddenly present themselves, where pilots have been accustomed to deep water; in many places, whole acres are swept away from one bank, and added to the other; and the pilot assured me, that in every voyage, he could perceive fresh changes.

Many circumstances contribute to render these changes more rapid in the Mississippi, than in any other river. Among these, perhaps, the greatest is the vast volume of its waters, acting on alluvial matter, peculiarly penetrable. The river, when in flood, spreads over the neighbouring country, in which it has formed channels, called *bayous*. The banks thus become so saturated with water, that they can oppose little resistance to the action of the current, which frequently sweeps off large portions of the forest.

The immense quantity of drift-wood is another cause of change. Floating logs encounter some obstacle in the river, and become stationary. The mass gradually accumulates; the water, saturated with mud, deposites a sediment, and thus, an island is formed, which soon becomes covered with vegetation. About ten years ago, the Mississippi was surveyed by order of the government; and its islands, from the confluence of the Missouri to the sea, were numbered. I remember asking the pilot the name of a very beautiful island, and the answer was, five-hundred-and-seventy-three, the number assigned to it in the hydrographical survey, and the only name by which it was known

A traveller on the Mississippi has little to record in the way of incident. For a week we continued our course, stopping only to take in wood, and on one occasion to take in cargo, at an inconsiderable place called Memphis, which stands on one of the few bluffs we encountered in our progress. At length we reached Natchez, a town of some importance in the state of Mississippi. We only halted there for an hour.

One of the most striking circumstances connected with this river-voyage, was the rapid change of climate. Barely ten days had elapsed since I was traversing mountains almost impassable from snow. Even the level country was partially covered with it, and the approach of spring had not been heralded by any symptom of vegetation. Yet, in little more than a week, I found myself in the region of the sugar-canes.

The process of this transition was remarkable. During the first two days of the voyage, nothing like a blossom or a green leaf was to be seen. On the third, slight signs of vegetation were visible on a few of the hardier trees. These gradually became more general as we approached the Mississippi; but then, though our course lay almost due south, little change was apparent for a day or two. But after passing Memphis, in latitude 35°, all nature became alive. The trees which grew on any little eminence, or which did not spring immediately from the swamp, were covered with foliage; and at our wooding times, when I rambled through the woods, there were a thousand shrubs already bursting into flower. On reaching the lower regions of the Mississippi, all was brightness and verdure. Summer had already begun, and the heat was even disagreeably intense.

Shortly after entering Louisiana, the whole wildness of the Mississippi disappears. The banks are all cultivated, and nothing was to be seen but plantations of sugar, cotton, and rice, with the houses of their owners, and the little adjoining hamlets inhabited by the slaves. Here and there were orchards of orange-trees, but these occurred too seldom to have much influence on the landscape.

MINIMUM DUTIES.

By these duties are meant, such as are imposed on goods at a certain standard of cost, ad valorem. For instance; suppose one dollar to be the minimum standard—all goods costing any amount under that standard, or between that and the next lower minimum, are subject to the higher minimum or that of one dollar. Minimums are abolished now, save on cottons. Some of them are subject to a duty as costing eight cents per yard—all coming below that in the invoice value are carried up to the minimum of eight cents.

On laying the Corner-Stone of the Monument to the Mother of Washington.—Mrs. Sigourney.

Long hast thou slept unnoted. Nature stole
In her soft ministry around thy bed,
Spreading her vernal tissue, violet-gemmed,
And pearled with dews.
She bade bright Summer bring
Gifts of frankincense, with sweet song of birds,
And Autumn cast his reaper's coronet
Down at thy feet, and stormy Winter speak
Sternly of man's neglect.
But now we come
To do thee homage, mother of our chief!
Fit homage, such as honoureth him who pays.
Methinks we see thee, as in olden time;
Simple in garb, majestick and serene,
Unmoved by pomp or circumstance, in truth
Inflexible, and with a Spartan zeal
Repressing vice, and making folly grave.
Thou didst not deem it woman's part to waste
Life in inglorious sloth, to sport awhile
Amidst the flowers, or on the summer wave,
Then fleet, like the ephemeron, away,
Building no temple in her children's hearts,
Save to the vanity and pride of life
Which she had worshipped.
For the might that clothes
The "Pater Patriæ," for the glorious deeds
That make Mount Vernon's tomb a Mecca shrine
For all the earth what thanks to thee are due,
Who, midst his elements of being, wrought,
We know not; Heaven can tell.
Rise, sculptured pile
And show a race unborn, who rests below,
And say to mothers what a holy charge
Is theirs, with what a kingly power their love
Might rule the fountains of the new-born mind.
Warn them to wake at early dawn, and sow
Good seed, before the world hath sown her tares;
Nor in their toil decline, that angel-bands
May put the sickle in and reap for God,
And gather to his garner.
Ye, who stand,
With thrilling breast, to view her trophied praise,
Who nobly reared Virginia's godlike chief;
Ye, whose last thought upon your nightly couch,
Whose first at waking, is your cradled son,
What though no high ambition prompts to rear
A second Washington; or leave your name
Wrought out in marble with a nation's tears
Of deathless gratitude; yet may you raise
A monument above the stars; a soul
Led by your teachings, and your prayers, to God.

JOURNAL OF CAPTAIN ROSS.

Second Voyage of Discovery to the Arctick Regions. By Captain Ross, R. N. 4to. with numerous plates.—London.

This last attempt to find a northwest passage was, it may be remembered, a private adventure. The government were grown weary of expeditions, all ending one after another, in disappointment. But though every reasonable man had long been satisfied that no commercial advantages could arise from further investigation, not even from the discovery of such a passage, still it was not without regret they heard that all attempts were to be abandoned, and the problem to remain for ever unsolved. For more than three centuries the subject had occupied publick attention; numberless attempts had been made, and England had been foremost in exertion; and the daring, skill, and enterprise of her officers, had latterly done much in the way of discovery, though these discoveries tended only to narrow the chances of success. Some, more sanguine, still entertained hopes of the possibility of finding a passage through Prince Regent's Inlet. There was known to be an open sea at the farthest point reached by the Fury, and on the opposite shore at Cape Turnagain, which had been visited through Behring's Straits, and these two points were only separated a few hundred miles. Upon the strength of these facts, Captain Ross determined to try his fortune once again, and either to accomplish the object by sailing through the strait, if such existed, or prove that the continent of America shut out all chance of success by this inlet.

A private individual, a citizen of London, Mr. (now Sir Felix) Booth, nobly undertook to defray the expenses of the expedition. From experience, Capt. Ross was of opinion that a steam vessel would give him the best chance of success; in these northern latitudes, when the sea is open, the wind is usually adverse, and the small draft of water would give such a vessel great advantages over a sailing ship. Accordingly, such a vessel was purchased, new patent engines were put into her, and all due preparation having been made, the Victory, (so she was named,) in company with a store-ship, intended to carry stores and provisions as far as Prince Regent's Inlet, sailed from the River Thames on the 23d of May, 1829, with the anxious good wishes of all, but fearful forebodings of the more experienced. Misfortunes at the outset were sad prognostications of the future: the inefficiency of the engine was shown in the first few hours; and we may state, at once, that it was found so wholly unserviceable, that it was eventually taken out and thrown away; and the crew of the store-ship mutinied, and refused to proceed on the voyage.

Notwithstanding these and many other discouraging circumstances, Captain Ross never, for a moment, hesitated to proceed: and after encountering much rough weather, they reached Davis's Straits early in July, and on the 23d touched at the Danish settlement of Holsteinborg, where they were received with great cordiality. Having made some needful repairs, and supplied themselves with many things wanting, from the wreck of a London whaler, they sailed again on the 26th. On the 30th they first saw ice, and they entered Lancaster Sound on the 6th of August.

They now proceeded down the Sound, and direct for Prince Regent's Inlet. On the 12th of August they reached the immediate neighbourhood of the spot where the Fury was wrecked.

"The Victory being now securely moored in a good ice harbour, within a quarter of a mile where the Fury's stores were landed, we were anxious to examine the spot; and having ordered the men a good meal, with the rest to which they were so well entitled, I landed at nine with Commander Ross, Mr. Thom, and the surgeon. We found the coast almost lined with coal; and it was with no common interest that we proceeded to the only tent which remained entire. This had been the mess tent of the Fury's officers; but it was too evident that the bears had been paying frequent visits. There had been a pocket near the door where Commander Ross had left his memorandum book and specimens of birds; but it was torn down, without leaving a fragment of what it contained. The sides of the tent were also in many places torn out of the ground, but it was in other respects entire.

"Where the preserved meats and vegetables had been deposited, we found every thing entire. The canisters had been piled up in two heaps; but though quite exposed to all the changes of the climate for four years, they had not suffered in the slightest degree. There had been no water to rust them, and the security of the joinings had prevented the bears from smelling their contents. Had they known what was within, not much of this provision would have come to our share, and they would have had more reason than we to be thankful for Mr. Donkin's patent. On examining the contents, they were not found frozen, nor did the taste of the several articles appear to have been in the least degree altered. This was indeed no small satisfaction; as it was not our luxury, but our very existence and the prospect of success, which were implicated in this most gratifying discovery. The wine, spirits, sugar, bread, flour, and cocoa, were all in good condition, with the exception of a part of the latter which had been lodged in provision casks. The lime juice and the pickles had not suffered much: and even the sails, which had been well made up, were not only dry, but seemed as if they had never been wetted. It was remarkable, however, that while the spun yarn was bleached white, all appearance and smell of tar had vanished from it.

"We proceeded now to the beach where the Fury had been abandoned, but not a trace of her hull was to be seen. There were many opinions; but all were equally at liberty to conjecture what had become of the wreck. Having often seen, however, what the moving masses of ice could do on this coast, it was not difficult to guess in general what we could not explain in detail. She had been carried bodily off, or had been ground to atoms and floated away to add to the drift timber of these seas. At any rate, she was not to be found; we had seen no appearance of her during the ten miles that we had coasted within pistol-shot of the shore to the southward of this place, and we now examined it for two miles to the northward with no better success.

"We therefore returned on board, and made preparations for embarking a sufficiency of stores and provisions to complete our equipment for two years and three months; being what we expected to want on the one hand, and to obtain on the other. I need not say that it was an occurrence not less novel than interesting, to find in this abandoned region of solitude and ice and rocks, a ready market where we could supply all our wants, and, collected in one spot, all the materials for which we should have searched the warehouses of Wapping or Rotherhithe: all ready to be shipped when we chose, and all free of cost; since it was the certainty of this supply (and a well-grounded one it proved,) that had formed the foundation of the present expedition.

"A list of our wants was accordingly made out by Mr. Thom, who remained on board to receive the stores, together with the leading mate and a few hands. On shore, the rest of the crew were ready with the boats to receive and transport whatever was to be taken; and the steward, together with the surgeon, were employed in selecting whatever appeared to be of the best quality. Yet all that we could possibly stow away seemed scarcely to diminish the piles of canisters, of which we embarked whatever we could, together with such flour, cocoa, and sugar, as we wanted; all that we took being in excellent condition.

"We continued our embarkation this day, (Aug. 15,) including ten tons of coals; and, after allowing the men some rest, we contrived to get these, together with all the provisions and a part of the stores, on board before dinner time. We had found the spare mizen topmast of the Fury; and this was selected by the carpenter for a new boom, in place of the one that we had lost. We also got some anchors and hawsers, together with some boatswain's and carpenter's stores to make up for our deficiencies. Some of the best of the sails were taken to make housings; having found that belonging to the Fury damaged from having been ill made up, and from having lain in a situation which prevented the melted snow from running off. A skreen lined with fearnaught was also found in tolerable condition; but the bears had overset the harness cask, and devoured nearly the whole of the contents. We found that some of the candle-boxes had been entered, either by ermines or mice; one of them being entirely emptied, and the others partially. Though bleached, and especially on the upper side, as I already remarked of the spun yarn, none of the ropes were rotten, the cables seemed perfect; and thence we concluded that the canvass of the tents had merely been blown away by the wind, after the bears had loosened the cloths at the foot, in attempting an entrance.

"The chain cable and the carronades were more or less covered by the small stones on the beach, and except being slightly rusted, were just as they had been left. The powder magazine, detached from the rest of the store, was unroofed, and the waterproof cloth of it in tatters; but the patent cases had kept the gunpowder itself perfectly dry."

Of the difficulties now encountered, in consequence of the defective state of the engine—of their exertions, their hopes, and their disappointments, and their critical situation upon more than one occasion, a few extracts may suffice to convey an idea to the reader. Thus, Captain Ross observes:—

"The change of tide, and that a rapid one, setting from the westward, drove us from our place of refuge; and we were carried within three yards of some rocks which were just under water, at the narrowest part of the point. Believing that we might succeed in rounding this place, and thus getting into what seemed to be still water, we laboured hard by warping; there being a small creek immediately beyond it, which held out a promise of security. This, most unluckily, proved to be a whirl pool: and having been turned round by it many times, for more than an hour, we were obliged to leave it, and trust ourselves once more to the confusion without. Thus situated, no resource was left but to attach ourselves to a mass of ice which was floating along in the middle of the stream; hoping thus to escape a repetition of what we had just been enduring.

"We were thus at length extricated, but not without undergoing heavy pressure; our iceberg carrying us to the westward, even against a strong wind. The tide, however, diminished in force as we proceeded; and as the smaller pieces of ice now sailing with us did not drift so fast as that to which we were attached, the whole became at length so slack that we were able to make sail before noon, and at last got into clear water.

"The danger, however, was not yet over; since we were subject to be carried back by the next tide, unless we could get out of its influence before the change. But the wind was right against us, and we could expect to make little progress with our sails, and such a vessel, by plying to windward; while, to anchor in a tideway like this, was out of the question. Thus we soon found that we were losing ground; but at four o'clock we began to gain considerably, when it fell suddenly calm. A harbour now appearing not far off, in the nearest land, we contrived to warp into it by means of the boats, and found good shelter behind a reef of rocks, lined by icebergs, within a cable's length of the shore; making fast to two of these masses which were aground in four fathoms water.

"More than I among us had witnessed similar scenes, and, in some manner or other, we had been extricated; but, with all this, we could not but feel astonishment, as well as gratitude, at our having escaped here without material damage. For readers, it is unfortunate that no description can convey an idea of a scene of this nature: and, as to the pencil, it cannot represent motion or noise. And to those who have not seen a northern ocean in winter—who have not seen it, I should say, in a winter's storm—the term ice exciting but the recollection of what they only know at rest, in an inland lake or canal, conveys no ideas of what it is the fate of an arctick navigator to witness and to feel. But let them remember that ice is stone; a floating rock in the stream, a promontory or an island when aground, not less solid than if it were a land of granite. Then let them imagine, if they can, these mountains of crystal hurled through a narrow strait by a rapid tide; meeting, as mountains in motion would meet, with the noise of thunder, breaking from each other's precipices huge fragments, or rending each other asunder, till, losing their former equilibrium, they fall over headlong, lifting the sea around in breakers, and whirling it in eddies; while the flatter fields of ice, forced against these masses, or against the rocks, by the wind and the stream, rise out of the sea till they fall back on themselves, adding to the indescribable commotion and noise which attend these occurrences.

"It is not a little, too, to know and to feel our utter helplessness in these cases. There is not a moment in which it can be conjectured what will happen in the next: there is not one which may not be the last; and yet that next moment may bring rescue and safety. It is a strange, as it is an anxious position; and, if fearful, often giving no time for fear, so unexpected is every event, and so quick the transitions. If the noise, and the motion, and the hurry in every thing around, are distracting, if the attention is troubled to fix on any thing amid such confusion, still must it be alive, that it may seize on the single moment of help or escape which may occur. Yet with all this, and it is the hardest task of all, there is nothing to be acted, no effort to be made: and though the very sight of the movement around inclines the seaman to be himself busy, while we can scarcely repress the instinct that directs us to help ourselves in cases of danger, he must be patient, as if he were unconcerned or careless; waiting as he best can for the fate, be it what it may, which he cannot influence or avoid."

On the 30th of September it was considered that all hopes of making further progress that season was at an end, and they proceeded to take up their winter quarters.

"It was now that we were compelled to think, for it was now that there was nothing more to be performed; as it was now also that the long and dreary months, the long-coming year I might almost say, of our inevitable detention among this immoveable ice rose full in our view. The prison door was shut upon us for the first time; while feeling that if we were helpless as hopeless captives, that not even Nature could now relieve or aid us, for many a long and weary month to come, it was impossible to repel the intrusion of those thoughts which, if they follow disappointment, press on us ever more heavily, under that subsidence of feeling which follows on the first check to that exertion by which hope was supported."

On the 8th of October, Captain Ross observes:—

"Our conviction was indeed absolute; for there was now not an atom of clear water to be seen any where; and excepting the occasional dark points of a protruding rock, nothing but one dazzling and monotonous, dull and wearisome extent of snow was visible, all round the horizon in the direction of the lands. It was indeed a dull prospect. Amid all its brilliancy, this land, the land of ice and snow, has ever been, and ever will be a dull, dreary, heart-sinking, monotonous waste, under the influence of which the very mind is paralyzed, ceasing to care or think, as it ceases to feel what might, did it occur but once, or last but one day, stimulate us by its novelty: for it is but the view of uniformity and silence and death. Even a poetical imagination would be troubled to extract matter of description from that which offers no variety; where nothing moves and nothing changes, but all is for ever the same, cheerless, cold, and still."

The Captain now offers some general remarks on the actual temperature, and on that of sensation. Perhaps a few extracts may interest the reader:—

"The snow ceased before daylight, but it blew fresh from the north; feeling very cold, though the thermometer was 18°: a temperature, which, but a few days before, had not been disagreeable. This difference is very obviously, as it is vulgarly, explained by the different strength of the wind; while the immediate cause, on this supposition, is too simple to require statement. But there is much more to be taken into consideration.

"Among these considerations, is the hygrometrical state of the air, of which we did not preserve any register: but this is not so simple a case as it appears at first sight. Every one knows that a damp air feels cold and raw; it is a better conductor of heat. Yet the same effect on the sensations is produced by the reverse condition of the atmosphere. A dry air increases the evaporation from the body, and that evaporation is a source of cold. * * *

"But the state of the body itself is scarcely of less moment than all this, in any attempts to explain these apparent contradictions; as it complicates the whole question in a far higher degree. Every one knows that the sense of cold can exist in certain fevers, even under the burning sun of Africa; and the same internal sensation, as a low temperature, is of frequent occurrence from other diseases, and moreover from derangements of health so slight as to be undefinable. It is far more remarkable, that the feeling of extreme cold can be present, under fever, when the temperature of the body is many degrees above the natural standard, and when to the touch of others, the patient is burning hot; as, in the space of a very few minutes, it may appear the same to himself, though no change of the actual temperature has taken place.

"Thus also, if the circumstances differ, does exercise, or the want of it, produce sensations of temperature, when there is nothing external to cause them; and the case is similar under want, or reversely, under abundance of food. These are things which affect the power that generates animal heat; as the greater or less energy of this power is perhaps the chief cause of all the facts which are often so difficult of explanation under a simple regard to external temperature. That energy, too, is not the mere produce of food or exercise; there are cases in which no allowance of food, and no exertion of the muscular powers will suffice to preserve a high temperature in the human body. In reality, though it is little remarked, and, as far as I know, is not even observed by the writers on physiology, the power of generating heat varies exceedingly in different individuals, and is as much a portion of the original contsitution, as are the muscular or the mental energies. Any one who pleases may observe this in common life; it was always striking to us, in circumstances where the application of the test was so often extreme; so that, after a little practice, it was easy to anticipate who would suffer from degrees of cold which others would despise. * * *

"The conclusion, therefore, in which I wish to rest is this: namely, that in every expedition or voyage to a polar region, at least if a winter residence is contemplated, the quantity of food should be increased, be that as inconvenient as it may. It would be very desirable indeed if the men could acquire the taste for Greenland food; since all experience has shown that the large use of oil and fat ments is the true secret of life in these frozen countries, and that the natives cannot subsist without it; becoming diseased, and dying under a more meager diet. * * I have little doubt, indeed, that many of the unhappy men who have perished from wintering in these climates, and whose histories are well known, might have been saved if they had been aware of these facts, and had conformed, as is so generally prudent, to the usages and the experience of the natives. * * *

"I will only add to these remarks, what may, I trust, be of use to future arctick navigators, namely, that although every expedient in the way of clothing should be adopted for resisting the impressions of external temperature, as these are too well known to require detail, nothing will compensate for the want of the heat-generating energy, but external heat; as that is but too often an imperfect expedient. It is of little use to clothe him who will not, in himself, produce heat; it is like the attempt to warm a piece of ice by means of a blanket; but it is too common a mistake to imagine that the expedient which can only preserve heat is capable of producing it."

Active preparations were now made for the winter. "On the 20th of October (says the captain,) the last of the engine was hoisted out: may I not say that there was not one of us who did not hail this event with pleasure. We could not even look at its fragments without recollecting what it ought to have been, and what it proved to be; nor without reflections, and those not kind ones, on its maker, when we remembered the endless and ever-recurring trials of our patience which it had caused, the never-ceasing labour of the men in its reparation, the ever-renewed hopes, producing ever new disappointments, and the loss of temper, to most of us, I fear, of which it had been the fertile cause.

"It now became necessary to cut away the ice round the ship, in consequence of her having been so much lightened; that she might settle to her natural line of flotation. This being done, she rose nine inches; and we proceeded to build up a bank of snow and ice round her, for shelter from the cold. The gallery was also moved, and placed in the centre of the men's berth, that the heat from the fire might be more equally distributed. A tank of plate iron was, further, placed on the upper deck, over the coppers; and, by this contrivance, the steam, which is a constant annoyance at these low temperatures, was secured and condensed."

At the end of this month, he observes:—

"Our roofing had been perfected in this month: but it still remained to complete our embankment, and to cover the upper deck with snow. More arrangements than those yet noticed had also been made in the interiour of the ship, by constructing a room in the place of the steerage, to receive the men's chests and the apparatus for cooking and baking; while copper flues were carried from them round the whole apartment, in order to convey away the vapour. Over the steam kitchen, oven, and after-passage, apertures were made in the upper deck, on which were placed iron tanks with their openings downward. In these the vapour was received, and became immediately condensed: but though we rather expected that we might have drawn it off in the shape of water and had contrived means accordingly, we found it so generally frozen that these were of no use.

"We found this last contrivance to be the best that had yet been adopted; and chiefly as, by keeping the apartment of the crew dry, it saved the necessity of forcing up the temperature, as had been done on former occasions, for the purpose of keeping the vapour afloat till it was condensed on the beams and deck. This, too, involved a great saving of fuel: since we found that a temperature of between 40° and 50° was sufficient to make the place dry, warm, and comfortable, whereas it had, in the ships that preceded us, been necessary to carry it as high as 70°."

The snow on these occasions is cut into masses resembling squared stones, and used in the same way, the cement being of water. The solidity of what is here called snow, may not be generally understood. On another occasion, Commander Ross says:—

"It must appear strange to readers ignorant of these countries, to hear that the people suffer more from thirst, when travelling, than from all the other inconveniences united. By us, at home, where the snow can never be very cold, where it can therefore be easily melted by the ordinary heat of the body and where it can even be eaten as a substitute for water, the very different temperature of the same substance in that country is easily overlooked, as many persons are even ignorant of this fact. No great inconvenience can occur as to this matter, where its heat is rarely much below the freezing point, and scarcely ever falls as low as twenty degrees. It is a very different thing, when perhaps the highest temperature of the snow during the winter months, is at zero, and when it often falls to minus fifty or more, or to eighty degrees below the point at which we should attempt to thaw or eat it in England. Were it not so bad a conductor as it is, we could, in this country, no more take it into the mouth, or hold it in the hands, than if it was so much redhot iron: but, from that cause, this consequence at least does not follow. The effect nevertheless which it does produce, is that of increasing, instead of removing the thirst which it is endeavoured to quench: so that the natives prefer enduring the utmost extremity of this feeling, rather than attempt to remove it by the eating of snow."

Few circumstances now occurred to vary the dull monotony of such a life, and we shall pass on to Christmas:—

"The elements themselves seemed (says the captain,) to have determined that it should be a noted day to us, for it commenced with a most beautiful and splendid aurora, occupying the whole vault above. At first, and for many hours, it displayed a succession of arches, gradually increasing in altitude as they advanced from the east and proceeded towards the western side of the horizon; while the succession of changes were not less brilliant than any that we had formerly witnessed. The church service allotted for this peculiar day was adopted; but as it is the etiquette of the naval service, the holiday was also kept by an unusually liberal dinner, of which, roast beef from our Galloway ox, not yet expended, formed the essential and orthodox portion. I need not say that the rule, against grog was rescinded for this day, since without that, it would not have been the holiday expected by a seaman. The stores of the Fury rendered us, here, even more than the reasonable service we might have claimed; since they included minced pies, and what would have been more appropriate elsewhere, though abundantly natural here, iced cherry brandy with its fruit; matters, however, of amusement, when we recollected that we were rioting in the luxuries of a hot London June, without the heat of a ball in Grosvenor Square to give them value, and really without any especial desire for sweetmeats of so cooling a nature. I believe that it was a happy day for all the crew: and happy days had a moral value with us, little suspected by those whose lives of uniformity, and of uniform ease, peace, and luxury, one or all, render them as insensible to those hard-won enjoyments, as unobservant of their effects on the minds of men. To display all our flags was a matter of course; and the brilliancy of Venus was a spectacle which was naturally contemplated as in harmony with the rest of the day."

On the 9th of January, notice was given that strangers had appeared in the neighbourhood, and could be seen from the Observatory.

"I proceeded accordingly (says the Captain) in the direction pointed out, and soon saw four Esquimaux near a small iceberg, not far from the land, and about a mile from the ship. They retreated behind it as soon as they perceived me; but as I approached, the whole party came suddenly out of their shelter, forming in a body of ten in front and three deep, with one man detached, on the land side, who was apparently sitting in a sledge. I therefore sent back my companion for Commander Ross to join me, together with some men who were directed to keep at a distance behind him. Proceeding then alone, to within a hundred yards, I found that each was armed with a spear and a knife, but saw no bows and arrows.

"Knowing that the word of salutation between meeting tribes was *Tima tima*, I hailed them in their own language, and was answered by a general shout of the same kind; the detached man being then called in front of their line. The rest of my party now coming up, we advanced to within sixty yards, and then threw our guns away, with the cry of *Aja, Tima*; being the usual method, as we had learned it, of opening a friendly communication. On this, they threw their knives and spears into the air in every direction, returning the shout *Aja*, and extending their arms to show that they also were without weapons. But as they did not quit their places, we advanced, and embraced in succession all those in the front line, stroking down their dress also, and receiving from them in return this established ceremony of friendship. This seemed to produce great delight, expressed on all hands, by laughing, and clamour, and strange gestures: while we immediately found ourselves established in their unhesitating confidence.

'Commander Ross' experience was here of great use; and, being informed that we were Europeans (Kablunæ,) they answered that they were men Innuit. Their numbers amounted to thirty-one; the eldest, called Illicta, being sixty-five years of age, six others between forty and fifty, and twenty of them between forty and twenty: the number being made up by four boys. Two were lame, and, with the old man, were drawn by the others on sledges; one of them having lost a leg, from a bear as we understood, and the other having a broken or diseased thigh. They were all well dressed, in excellent deerskins chiefly; the upper garments double, and encircling the body, reaching, in front, from the chin to the middle of the thigh, and having a cape behind to draw over the head, while the skirt hung down to the calf of the leg, in a peak not unlike that of a soldier's coat of former days. The sleeves covered the fingers; and, of the two skins which composed all this, the inner one had the hair next the body, and the outer one in the reverse direction. They had two pairs of boots on, with the hairy side of both turned inwards, and above them, trousers of deerskin, reaching very low on the leg; while some of them had shoes outside of their boots, and had sealskins instead of those of deer, in their trousers.

"With this immense superstructure of clothes they seemed a much larger people than they really were. All of them bore spears, looking not much unlike a walking-stick, with a ball of wood or ivory at one end, and a point of horn at the other. On examining the shafts, however, they were found to be formed of small pieces of wood, or of the bones of animals, joined together very neatly. The knives that we first saw, consisted of bone or reindeer's horn, without point or edge, forming a very inoffensive weapon; but we soon discovered that each of them had, hanging at his back, a much more effective knife pointed with iron, and some also edged with that metal. One of them proved also to be formed of the blade of an English clasp-knife, having the maker's mark on it, which had been so fixed as to be converted into a dagger.

"This was a proof of communication with the tribes that trade with Europeans, if that was not the case with themselves. * * *

"Three of the men were, after this, introduced into the cabin, where, at length, they showed abundant signs of wonder. The engravings, representing their countrymen, selected from the several former voyages, gave them great delight, as they instantly recognized them to be portraits of their own race. The looking-glasses, as usual, were, however, the chief source of astonishment, as, especially, was a sight of themselves in our largest mirror. Scarcely less surprise was excited by the lamp and the candlesticks; but they never once showed a desire to possess themselves of any thing; receiving merely, what was offered, with signs of thankfulness that could not be mistaken. They did not relish our preserved meat; but one who ate a morsel seemed to do it as a matter of obedience, saying it was very good, but admitting, on being cross-questioned by Commander Ross, that he had said what was not true: on which, all the rest, on receiving permission, threw away what they had taken. But the same man, on being offered some oil, drank it with much satisfaction, admitting that it was really good. Thus admirably are the tastes of all these tribes adapted to their compulsory food, and their views of happiness to the means of it which have been provided." * * *

(*Concluded in our next.*)

CORSETS.

AMERICAN INSTITUTE OF THE CITY OF NEW YORK,

Organized Jan. 1828, "for the purpose of encouraging and promoting domestick industry in this State and the United States, in agriculture, commerce, manufactures, and the arts, and any improvements made therein, by bestowing rewards and other benefits on those who shall make any such improvements, or excel in any of the said branches." Its officers are, a board of Trustees, a President, three Vice Presidents, two Secretaries, a Treasurer, and Library Committee. It has a statistical library of about 2,000 volumes. An address is delivered and a Fair held annually. The finest specimens of every species of manufacture which are presented at these Fairs render them highly interesting and imposing. The successful competitors in the exhibition of their articles of manufacture, receive a certificate or diploma as the honourable testimonial or reward of the American Institute. These testimonials are no doubt of a high degree of utility, and tend to excite a laudable emulation in the various branches of industry. It is to be regretted, however, that they are bestowed rather too indiscriminately, and will soon become so common and so easily obtained that their intended object must of a certainty be defeated. They are displayed in almost every office and window, from that of the steamboat architect, down to that of the sweet manufacturer of sugar-candy.

But of all manufactures which the American Institute hath undertaken to foster and recommend to publick patronage, American Corsets, the best high pressure system of metamorphosing female bodies into cut-wasps with the least possible waists, is by no means least deserving of notice. Doubtless, it was a desideratum that the royal anti-angular, succedaneous system of carrying forward an enterprise, should be introduced into that important art of deranging the stomach, liver, lungs, in fact, the whole body of a female. Perhaps it was not. But it is sufficient that the American Institute thought it was; and as an encouragement to the inveterate, disgusting, pernicious and frightful practice of remodelling nature by stays, you will perceive their diplomas hanging in the corset warehouse, honouring the manufacturer of those best instruments of female distortion, by their gracious testimony. Great Patron of "agriculture, commerce, manufactures, and the arts, and any improvements made therein!" where is thy discretion, where thy shame? Dost thou in fact meditate the destruction of the female sex, by instigating men to manufacture improved instruments to constrict their forms to the attenuation of a wasp?

Consider the figures here presented, and behold what an insidious and destructive process, thou hast been pleased to bless and encourage. We trust that these figures will likewise make an impression upon every one of our readers, as well as upon every parent and guardian of youth in the country. They may also be found on page 56.

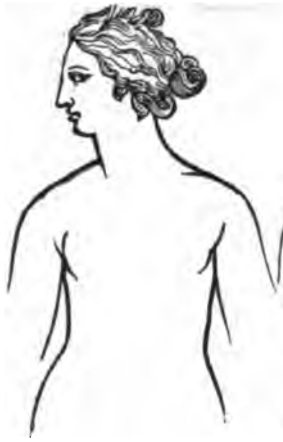


Fig. 1.

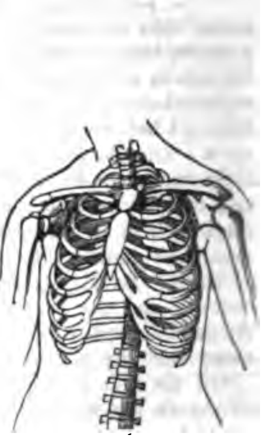


Fig. 2.

Fig. 1, is an outline of the famous statue of the Venus de Medici, and may be considered as the *beau ideal* of a fine female figure.

Fig. 2, is the skeleton of a similar figure, with the bones in their natural position.

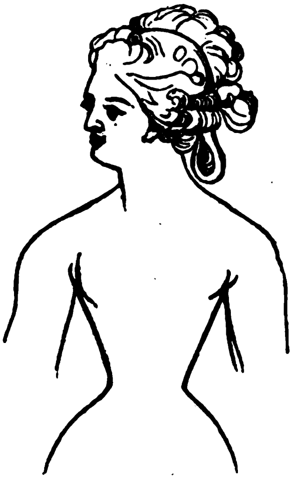


Fig. 3.

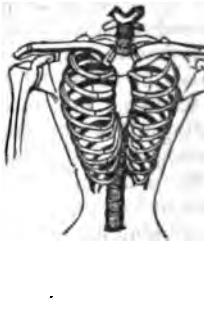


Fig. 4.

Fig. 3, is an outline of the figure of a modern "boarding-school miss," after it has been permanently remodelled by stays.

Fig. 4, is the skeleton belonging to such a figure as No. 3.

Thus, it is perceived, the American Institute has attempted to decrease the female sex, by increasing the best corsets. We ask our readers, whether the American Institute is not plainly *straining* overmuch by such *dignified* and tight-laced operations.

MRS. HEMANS.

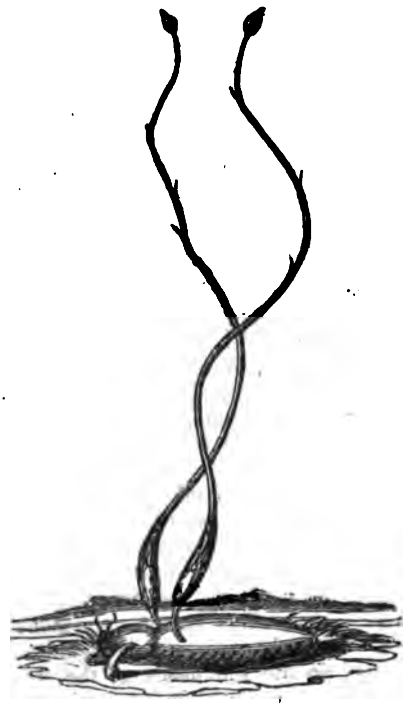
Mrs. Hemans died recently at Dublin. The following summary of her life, which we take from the London New Monthly, may not be uninteresting to our readers:—

Felicia Dorothea Brown was born in Liverpool, in a small, quaint-looking house in St. Anne Street, now standing, old-fashioned and desolate, in the midst of the newer buildings by which it is surrounded. Her father was a native of Ireland; her mother a German lady, a Miss Wagner, but descended from or connected with some Venetian family—a circumstance which she would playfully mention, as accounting for the strong tinge of poetry and romance which pervaded her character from her earliest childhood. When she was very young, her family removed from Liverpool to St. Asaph, in North Wales—she married at a very early age, and her married life, after the birth of five sons, was clouded by the estrangement of her husband. On the death of her mother, with whom she had resided, she broke up her establishment in Wales, and removed to Wavertree, in the neighbourhood of Liverpool, from whence, after a residence of three years, she again removed to Dublin, her last resting place. Her works are her best epitaph and eulogy.

MRS. HEMANS'S LAST POEM.

[The following beautiful lines were the last ever written by the late Mrs. Hemans: they breathe that pure spirit of devotion which characterized all she wrote. The Dublin University Magazine, from which we take them, says they are "the last verses ever dictated by her, which she sent to us a few days previous to her death." They are entitled "The Poetry of the Psalms."]

Nobly thy song, O minstrel, rushed to meet
Th' Eternal on the pathway of the blast,
With darkness round him, as a mantle cast,
And cherubim to waft his flying seat,
Amidst the hills that smoked beneath his feet.
With trumpet voice thy spirit called aloud,
And bade the trembling rocks his name repeat,
And bent the cedars, and the bursting cloud.
But far more glorious to earth made known
By that high strain, than by the thunder's tone,
The flashing torrents, or the ocean's roll;
Jehovah spoke through the imbreathing fire,
Nature's vast realms for ever to inspire
With the deep worship of a living soul.



A NEW CURIOSITY IN NATURAL HISTORY.

The above engraving represents a specimen of a natural production, which was shown to us a few evenings since, that is neither fish nor flesh, beast nor fowl, animal, vegetable nor mineral! It was procured in Plymouth, North Carolina, and brought to this city in a glass of alcohol. The *thing*, for it is without a name, is both entomological and vegetable. When its entomological nature ceases, its vegetable nature commences; and when its vegetable character has arrived at maturity, its entomological character develops itself and its vegetable existence disappears. In other words, it is alternately a plant and an insect. As an insect, it is perhaps about one inch in length and three fourths of an inch in circumference. It is of a brownish colour, shaped like a wasp, destitute of wings, head similar to a beetle with two antennæ or horns; has near its head on either side a short leg shaped like those of the mole, with broad, serrated extremities, and intended doubtless like those of the mole to assist the insect in penetrating the earth. It has also two posterior legs, the purposes of which shall be seen. When the insect has attained its growth it disappears beneath the surface of the ground and dies. Immediately after its death the two posterior legs just spoken of begin to sprout or vegetate. These two shoots soon appear above the earth, and the insect-plant soon attains the height of about six inches. It puts forth branches and leaves, resembling trefoil. The extremities of the branches bear a bud, which contains in embryo neither leaves nor flowers; but an insect! As the insect develops itself and grows, it either falls to the ground, or returns upon its mother plant, feeding on its leaves until the plant is exhausted, when the insect returns to earth again, and again the plant shoots forth!

The true nature of this insect-plant, or vegetable-insect, we know not what to call it, is entirely inexplicable to us. It may be surmised that an insect has here associated itself with the seed of a plant, in such a manner, that they reproduce and nurture each other. Or it may be supposed, that nature has invested this specimen of existence with attributes, the nearest possibly assimilated to those of both the vegetable and animal kingdoms, yet belonging not exactly to either, nor entirely to both. It may seem to be the hinging point at which the animal kingdom merges into the vegetable, and the vegetable into the animal kingdom. It is certainly a wonderful curiosity, and we believe that it is not only entirely unknown to naturalists, but has never before been publickly described.

We understand that a gentleman in Philadelphia, of whom the specimen we saw was procured, is cultivating a quantity of them which he has obtained from North Carolina, for the purpose of furnishing the museums. We hope to be able to furnish a more particular account of this insect-vegetable hereafter. In the specimen we saw, the plant had grown about three inches, and the insect was yet preserved in its original and nearly perfect state.

A SKETCH OF THE DRUIDS AND OTHER PRETENDERS TO WISDOM.

BY SAMUEL L. KNAPP.

The magicians and astrologers, and all the train of the east, were not the only people who pretended to exalted wisdom, and to the possession of wonderful knowledge. The Gauls and the Britons, and in fact, all the Celtick nations, had their magicians also. The Druids were more remarkable than the wise men of the east. We have some very accurate notices of them, particularly from Julius Cesar, on his return from Britain. The Druids took their name from the methods, or rather from the place of their worship, under the large oaks, in the open air; their temples were roofed only by the heavens; and the worshippers were surrounded, or circumscribed, by a rude, rough, low wall. Their worship was dark, figurative, and enigmatical. It was a jumble of astronomy, astrology, medicine, and mathematicks; in a word, all they knew, and all they pretended to know, or believe, was wrapped up in their sacred rites.

The Druids were divided into several *orders*, namely: the Vacerri, who were the priests, and dealt in all the sacrifices, incantations, and matters of religion. Their rites are described as being awful indeed. They not only sacrificed animals, as many other nations did, but they went further; and, in cases of great publick calamity, made offerings of human beings, selected for the purpose. To appease an offended deity, according to their creed, human blood must flow; but in this they were not alone. Many nations, bordering on Palestine, were guilty of these "*damned rites.*" The mistletoe, a parasitical plant, that, in their climate, is an evergreen, was held most sacred by them. It generally springs from the crevices of the bark of the oak, some way up the tree, among the branches, where the bark is more loose than on the lower part of the body of the tree. This plant is not found in the oaks of our immediate region; but it is seen, by those who visit Mount Vernon, hanging on the trees that overshadow the sacred relicks of Washington, an emblem of a fame that can never die. The mistletoe is there sometimes plucked by purer hands than those of the blood-stained Druids—by those of patriots—as a remembrancer of the place, and of the unfading laurels of the father of his country.

The second order was composed of the Bards; they were the historical and genealogical poets of Gaul and Britain. These were the Magi and Sophi of these countries; all the learning of their nation was found among them. They were astronomers and astrologers; and the orators, who spoke to the people on every great event. To them also was confided the *healing art*. Their name is retained in our language to the present day, and will probably for ever remain in it. From these bards, came all those Welsh genealogies, which are so minute and extended, and of which the Welsh are so proud, down to the present day.

The Lubages formed a third order. These were soothsayers, who probably did what the others told them to do. And the Simnothei were those who were tutors to the young initiates.

The women had a share in these druidical rites. The first class of them resembled the vestal virgins at Rome, and seemed to have the same vow of virginity, and the same influence among the people. Their number was small. The second class of the women were married, but were devotees, who were often from home whole seasons together.

The third class were female servants; and from these came the weird-sisters, and the whole tribe of our vulgar witches; and the word witch was indiscriminately used, both for themselves and husbands. These were spared, when the Romans made such havock among the other classes, as being too contemptible for a conqueror's sword. They were not sought for, when Edward cut off the few remaining bards that the Romans and the Saxons and the Danes had spared.

Many traditions of the Druids have come down to us; and there are societies of those who call themselves Druids, at this day. The association is for poetical, social, and kind purposes, and quite harmless. The initiation brings together many of the rites once practised among the bards. And one of the arts they inculcate and require is improvisatori poetry. If the ceremonies of the Druids who now exist, are of modern invention, he must have been a learned man who invented them.

The order of the House of Wisdom, was another body that laid claim to great mysteries. This body of wise men was established at Grand Cairo, in the reign of the sixth caliph of the Fatemite race. History informs us that it was once the largest school in the world; having had at one time fourteen thousand scholars. They lived in the midst of emulation, and in a blaze of genius. The caliph lavished on them half his revenue. The robes they assumed have come down to us. The black gown and the professor's cap are among them. This body came nearer to our forms and divisions of the faculties, than that of any former body; or, to speak more correctly, we have taken more from them than from others. In this school, mixed with other learning, there were taught the occult sciences—astrology, palmistry, and divinations, by mystick characters, and the combination of figures of their own invention. The most chastened and sober Egyptian or Arabian imagination, under literary and scientifick excitement, was but little short of the paroxysm of the Pythia, and the boldest of them pushed themselves into the world unknown, with a species of harmless, but fearless insanity. Their poetry, with true Eastern splendour, had a most metaphysical cast. They spoke of things that were not, except in their imagination, as things existing. They brought their paradise to earth, and carried this world to paradise. The gods and demi-gods of their masters, the Greeks, were all reasoning beings; but these followers of the prophet made their children of earth, or heaven; continually acting under the full force of inspiration, according to their power of bearing it. In process of time, this House of Wisdom became dilapidated; and a branch of this society severed from the original stock, fled to the mountains, and set up for themselves. They pretended to have among them the elixir of life; and their founder, Hassan Ben Sabah, was supposed to have drank it, and to have lived for ages. He was called the *Old Man of the Mountains*. His order was called *Assassins*. The term in that day, carried with it a different meaning from what it now does. It has been corrupted, as the words *knave*, *tyrant*, *villain*, *bucanier*, and many others have been. Deeds have given new significations to these words; so did the deeds of the *Assassins*. Many intelligent travellers, at least, think so. All that remains of the House of Wisdom at Grand Cairo, is a huge mosque, with many surrounding buildings, in which there is now kept a small and wretched school.

The descendants of the assassins are in every society, but are hunted down by the hue and cry of the virtuous in all communities; and when taken, are branded or destroyed for their deeds of blood; while the sons of the *house of wisdom*, like the pure streams of waters from our mountains, are too numerous to be distinguished or properly valued. There are other assassins than those who deal in blood—assassins of reputation—the most dangerous, because the most difficult to reach, or to destroy. These prowl through the land; are found in the highways, and by-ways of life; and, with a dagger-tongue, leave an incurable wound with every stab. The moral world is more overrun with monsters than the natural. The gibbet is for those who destroy life; but what scaffold of infamy is there for those who destroy reputation? To accept the cold and unmeaning apology of a slanderer, for the injury he has done, is like taking the saliva of a mad dog, venom, and froth and all, to cure the wound he has inflicted with his teeth.

There was, or, perhaps, there is, another society which we ought to mention, in connexion with those already named. I mean the Rosicrucian, or Brothers of the Rosy Cross. It was supposed to have existed in Germany, in the beginning of the fifteenth century. At the head of it, soon after it was founded, was Rosencrux, a learned man, who died, in a good old age, in the year 1484. The Rosicrucians were not much known in his time; for one of their principles was to keep themselves *invisible*. In the beginning of the seventeenth century, some of the learned Germans revived the society. They were alchymists, and astrologers, and pretended to know all the secrets of nature and grace. They held that dew was a great chymical power in nature, and they therefore took the title F. R. C.—*Fratris roris cocti*, or *brothers of exalted dew*—like many other titles, excessively unmeaning. They called themselves *illumines*, or *illuminati*, because all knowledge was, from their account, with them. I have no doubt that they did exist as a body. They assumed much, and their enemies gave them credit for still greater pretensions. Their first object was, probably, to enlighten mankind in their own way. The ignorance of the Catholicks, united with the intolerant spirit exhibited by the dignitaries of the church, at that time, made all the liberal-minded associate, for the purpose of breaking down bigotry and tyranny.

It is thought that Calvin was among the brothers, and that he bore their coat of arms; but, if he was, he knew how to attack the errours of the church, without destroying the faith of man. He threw illumination into the cells of the Vatican, where reason had faintly shone before, and lit up the lamp of God in the dark shrine of the cloister, without crumbling all the building to the dust. The illuminati have been defended from any but good and pure motives, by several able pens; nor do I mean to condemn those of the old school. The new were a spurious breed—I mean those who figured at the commencement of the French Revolution. They assumed a name they had no claim to, and promulgated their spurious doctrines for those of their betters. The illuminati are now harmless, at least as far as we know them, in this country; and have no object in view, but that of enlightening mankind by the means of education.

The Carbonari is a society of modern growth, but one that has made some noise in the world. Its precise origin is not known. It is said, by some writers, to have been founded by the late king of Naples, to imbody the first talents in his cause: but when he found that the sentiments of the majority were too liberal for him, he suppressed it. But, from my knowledge of its constituent principles, I fully believe that it had an earlier growth than the one ascribed to it; although it might have been used by the king of Naples for particular purposes. It is full of taste and refinement. There is nothing ignorant and vulgar about its constitution; nor, in this country, has it ever been used for improper purposes It is too full of the best days of the republicks, to have ever been used by a king of Naples, if he had known all things in and about it. It has a humble name, a *coal-man;* but those in the slightest degree acquainted with the names given to societies, are not to be told, that oftentimes their very names are matter of disguise, or have two meanings. It is thought that by this term carbonari, is only meant a living coal of patriotism, that shall for ever be kept burning on the altar of liberty. The interiour arrangement of this society is full of genius and taste, and well fitted for the polished Italians; but in an age of revolutions all secret associations are suspected, and generally traduced. This order was brought into this country from seven to ten years ago, and planted in this city and in Boston; but, in all probability, does not flourish much, as no great need of it can be proved to exist here. It was introduced by gentlemen, and those they brought within their pale, were men of intelligence and character. It requires too much learning and labour to keep it up with spirit, but it was founded with too much talent to expire in a short time.

Knickerbocker.

POPULAR ERROURS IN MEDICINE.

BY AN EDINBURGH PHYSICIAN.

A very common practice in eating such fruit as cherries is to swallow the stones, with the vague notion that these promote digestion. No errour can be more fatally absurd. Many cases have occurred where such practices have been the cause of death, and that of a most excruciating nature. One instance is on record of a lady who died in great agony after years of suffering, and the cause was found to be several large balls found in the intestines, accumulated around clusters of cherry-stones. The husks of gooseberries are often swallowed with the idea that they prevent any bad effects from the fruit. On the contrary, they are the most indigestible substance that can be swallowed, and pass the stomach without any change, although they cause excessive irritation, and not unfrequently inflammation of the bowels.

Many people put great faith in the wholesomeness of eating only of one dish at dinner. They suppose that the mixture of substances prevents easy digestion. They would not eat fish and flesh, fowl and beef, animal food and vegetables. This seems a plausible notion, but daily practice shows its utter absurdity. What dinner sits easier on the stomach than a slice of roast or boiled mutton, and carrots or turnips, and the indispensable potato? What man ever felt the worse of a cut of cod or turbot followed by a beefsteak, or a slice of roast beef and pudding? In short, a variety of wholesome food does not seem incompatible at meals, *if one do not eat too much*—here the errour lies.

It is a common practice with bathers, after having walked on a hot day to the sea-side, to sit on the cold damp rocks till they cool before going into the water. This is quite erroneous. Never go into the water if over-fatigued, and after profuse and long-continued perspiration, but always prefer plunging in while warm, strong, and vigorous, and even with the first drops of perspiration on your brow. There is no fear of sudden transitions from heat to cold being fatal. Many nations run from the hot bath, and plunge naked into the snow. What is to be feared is sudden cold after exhaustion of the body, and while the animal powers are not sufficient to produce a reaction or recovery of the animal heat.

There is a favourite fancy of rendering infants and farther-advanced children hardy and strong, by plunging them into cold water. This will certainly not prevent strong infants from growing stronger, but it will and often does kill three children out of every five. Infants always thrive best with moderate warmth and a milk-warm bath. The same rule applies to the clothing of infants and children. No child should have so light clothing as to make it feel the effects of cold—warm materials, loose and wide-made clothing, and exercise, are all indispensable for the health of the little ones. But, above all things, their heads should be kept cool, and generally uncovered.

Many people so laud early rising as would lead one to suppose that sleep was one of those lazy, sluggish and bad practices, that the sooner the custom was abolished the better. Sleep is as necessary to man as food, and as some do with one third of the food that others absolutely require, so five hours' sleep is amply sufficient for one, while another requires seven or eight hours. Some men cannot by any possibility sleep more than four or five hours in the twenty-four: and therefore, true to the inherent selfishness of human nature, they abuse all who sleep longer. No man should be taunted for sleeping eight hours if he can.

There is a common prejudice in the country, that old women, farriers, and professed bone-setters, are the only persons fit to prescribe for all sprains, dislocations, and broken bones. Are these subjects less likely to be understood by an anatomist and regularly educated man, than the more difficult and intricate diseases which he daily treats with success? What becomes of all such patients in large cities and hospitals, where a regular surgeon superintends their cure? Have we so many stiff joints and deformed and useless limbs as among the patients of the empirical bone-setter?

Many people do not eat salt with their food, and the fair sex have a notion that this substance darkens the complexion. Salt seems essential for the health of every human being, more especially in moist climates such as ours. Without salt, the body becomes infected with intestinal worms. The case of a lady is mentioned in a medical journal, who had a natural antipathy to salt, and never used it with her food; the consequence was, she became dreadfully infected with these animals. A punishment once existed in Holland, by which criminals were denied the use of salt; the same consequences followed with these wretched beings. We rather think a prejudice exists with some of giving little or no salt to children. No practice can be more cruel or absurd.

One great cause of reluctance to medicine among the ignorant, is the idea, that many, if not all of the powders and potions, are made from human bones, and other parts of the body. In the present day no such thing exists; but yet nothing can better exemplify the saying, "that popular prejudices are the cast-off clothes of philosophers, in which the rabble dress themselves," than the fact that even the great Lord Bacon believed in amulets; and Boyle seriously recommends the thigh-bone of an executed criminal as a powerful remedy in dysentery. Two thirds of the medicines in common use are dried roots, or leaves, or fruits, or gums of vegetables, reduced to powder, or infused in water or spirit of wine; the other third are salts, obtained from sea-water, from the waters of mineral springs, from burnt sea-weed or land vegetables, and from various preparations of the metals. Many a child has turned with horrour and disgust from a common emetick powder, under the false conception that it was human liver pounded, when he would even cheerfully have taken off the nauseating draught had he been told that it was nothing more than the clean-scraped roots of a beautiful little flowering plant, that grows in warm countries, called ipecacuanha. It is not an uncommon observation, and a sort of taunt, too, to the medical man, that his drugs are all disagreeable to the palate. People do not reflect that this is a wise provision of nature. What, for instance, would be the consequence if the fruit whose pulp bears the bitter purging colocynth, were as inviting to the taste as a pine-apple? Or how could the ignorant be restrained from every day poisoning themselves, if fox-glove, hemlock, or henbane, bore sweet and enticing fruits?

Another general reproach among the uninformed, is, that, in the present day, physicians disdain to employ in their prescriptions the native plants of this country. This reproach is quite unfounded; there is never a day that some one of our native vegetables are not prescribed; but, undoubtedly, some of our most active and most valuable medicines can only be procured from hotter climates.

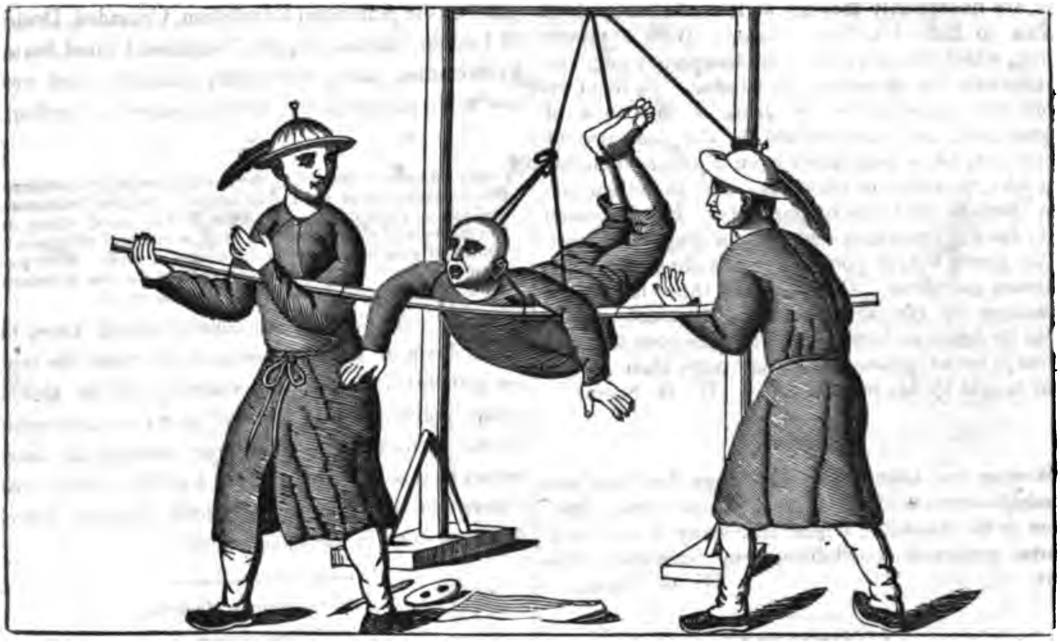
Chambers' Edin. Jour.

MARRIAGE.

You may depend upon it, that a slight contrast in character is very material to happiness in marriage.

Coleridge.

We believe that sentiment to be perfectly true. We would not join two of sanguine temperaments, nor two of phlegmatick temperaments; two of cold nor two of ardent dispositions; but we would join the sanguine and the phlegmatick, the cold and the ardent together. Two of a similar disposition repel each other; but two of dissimilar characters, like positive and negative electricity, associate with perfect unison.



CHINESE PUNISHMENTS, No. 6.

PUNISHMENT OF THE SWING.

This man is suspended by his shoulders and ancles, in a very painful situation: at intervals, two attending officers afford some trifling alleviation of his sufferings, by supporting him with a bamboo passed under his breast. Pencil, ink and paper, are ready to note down whatever he may say.

This punishment, together with the preceding one, is chiefly inflicted upon such merchants as have been detected in committing frauds, impositions, or any other unwarrantable tricks of trade.

EXCERPTS.

CONDUCT OF THE BRITISH AT THE SOUTH IN THE REVOLUTIONARY WAR.

Such was the rapacity of these robbers, that not content with stripping houses of their richest furniture, and individuals of their most precious ornaments, they violated the sanctuary of the dead, and, gasping for gold, went rummaging among the tombs.

Botta.

HORROURS OF THE FRENCH REVOLUTION.

Never were the finest affections more warmly excited, or pierced with crueller wounds. Whole families were led to the scaffold for no other crime than their relationship; sisters for shedding tears over the death of their brothers in the emigrant armies; wives who lamented the fate of their husbands, innocent peasant girls for dancing with the Prussian soldiers; a woman giving suck and whose milk spouted in the face of the executioner at the fatal stroke, merely for saying as a group were conducted to slaughter, "Here is much blood shed for a trifling cause!"

The people were goaded from tame into wild beasts. Not they, but their boastful oppressors turned pale, and crouched to the earth. Liberty, like the bruised adder, turned and stuck its mortal fangs, inflamed with rage and hate, into those who wished to crush it. The vilest and meanest of mankind were brought into contact with the pampered and the high-born—rag-sellers, dog-clippers, thieves, mendicants, with the haughty noble, the dignified prelate, the elegant courtier; and for one short hour misery showed to grandeur no more mercy than it had always received from it!

Haslitt.

Religion and morality are the anchors of the state.

Montesquieu.

Witty company sharpeneth the apprehension.

Scott.

Similes are to a poet what lasts are to a shoemaker.

Swift.

FAME.

When Fame's loud trump hath blown its noblest blast,
Though long the sound, the echo sleeps at last;
And glory like the phenix 'midst her fires,
Exhales her odours, blazes and expires.

Byron.

THE INDIAN CHARACTER.

It is rather too much the habit to speak of the Indians, at home and in their native character, as sternly and indifferently cold—people after the fashion of the elder Cato, who used to say that he never suffered his wife to embrace, except when it thundered—adding, by way of jest, that he was therefore never happy except when Jupiter was pleased to thunder. We should be careful not to speak of them as we casually see them,—when, conscious of our superiority, and unfamiliar with our language, they are necessarily taciturn as it is the pride of an Indian to hide his deficiencies. With a proper policy, which might greatly benefit upon circulation, he conceals his ignorance in silence. In his own habitation, uninfluenced by drink or any form of degradation, and unrestrained by the presence of superiours, he is sometimes even a jester—delights in a joke, practical or otherwise, and is not scrupulous about its niceness or propriety. In his council he is fond of speaking—glories in long talks, and, as he grows old, if you incline a willing ear, even becomes garrulous. Of course, all these habits are restrained by circumstance. He does not chatter when he fights or hunts, and when he goes to make a treaty, never presumes to say more than he has been taught by his people. *W. G. Simms.*

WOMAN.

Women are kept apart, as things for love and worship—domestick divinities, whose true altar-place is the fire-side; whose true sway is over fond hearts, generous sensibilities, and immaculate honour. *W. G. Simms.*

CONTENTMENT.

The ease with which the Kaffer lays aside his anxieties and care is truly remarkable. When the fatigues and toils of the day are brought to an end, he collects his herd, kindles a little fire, creeps under the spreading boughs of a bush, and there contentedly wraps himself up in his mantle. Amidst the most troublous times, if imminent danger be not absolutely at hand, he cheerfully spends his evening in turning the adventures of the day into tales of the most jocular description, and then lies down to sleep as composedly as if guarded by a thousand men. *Key's Travels in S. Africa.*

NOTICES, REVIEWS, &c.

'A popular Cyclopedia of History, ancient and modern, forming a copious historical dictionary of celebrated institutions, persons, places and things; with notices of the present state of the principal cities, countries and kingdoms of the known world: to which is added a chronological view of memorable events, as earthquakes, volcanick eruptions, storms, conflagrations, diseases, famines, inventions, discoveries, battles, treaties, settlements, origins of religious sects, &c. By F. A. Durivage. Illustrated by engravings. New York; Freeman Hunt & Co. 1835." 8vo. pp. 706.

The above work, the nature and object of which is sufficiently explained by its comprehensive title, has been presented to us; not thrown upon our editorial table as the pretty and fanciful of the craft are wont to say, for strictly speaking, we have no one table set apart for that especial editorial and bibliographical purpose; but presented to us for examination. We are of opinion that the Historical Cyclopedia is a valuable and interesting work, containing a mass of useful information collected together with great research, clothed in perspicuous language, handsomely illustrated by engravings and pleasing anecdotes, and printed in fair type on excellent paper, and substantially bound in a very convenient form for reading and occasional reference. The articles on the American Revolution, Crusades, Druids, El Dorado, Fairies, Jesuits, Templars, United States, Reformation, &c., are highly valuable, and very creditable indeed to the elegant pen of the author.

"Cobb's Manual; containing the Declaration of Independence; The Constitution of the United States; Political Definitions; and tables, showing the population of the United States and Territories, and of the principal cities, towns, and villages in the United States, agreeably to the census of 1830. With questions; designed for private use, and for the use of schools. Newark: Benjamin Olds. 1835." 18mo. pp. 34.

Every individual in our country should know the Declaration of Independence, understand the leading principles of our Constitution, and be able to define political terms at least so far as they relate to our government. They can accomplish themselves in this respect by the aid of Mr. Cobb's very convenient and very valuable little Manual, which deserves to be in the hands of all.

For the Family Magazine.

KINDNESS.

————————"it is twice blessed;
It blesseth him that gives and him that takes."

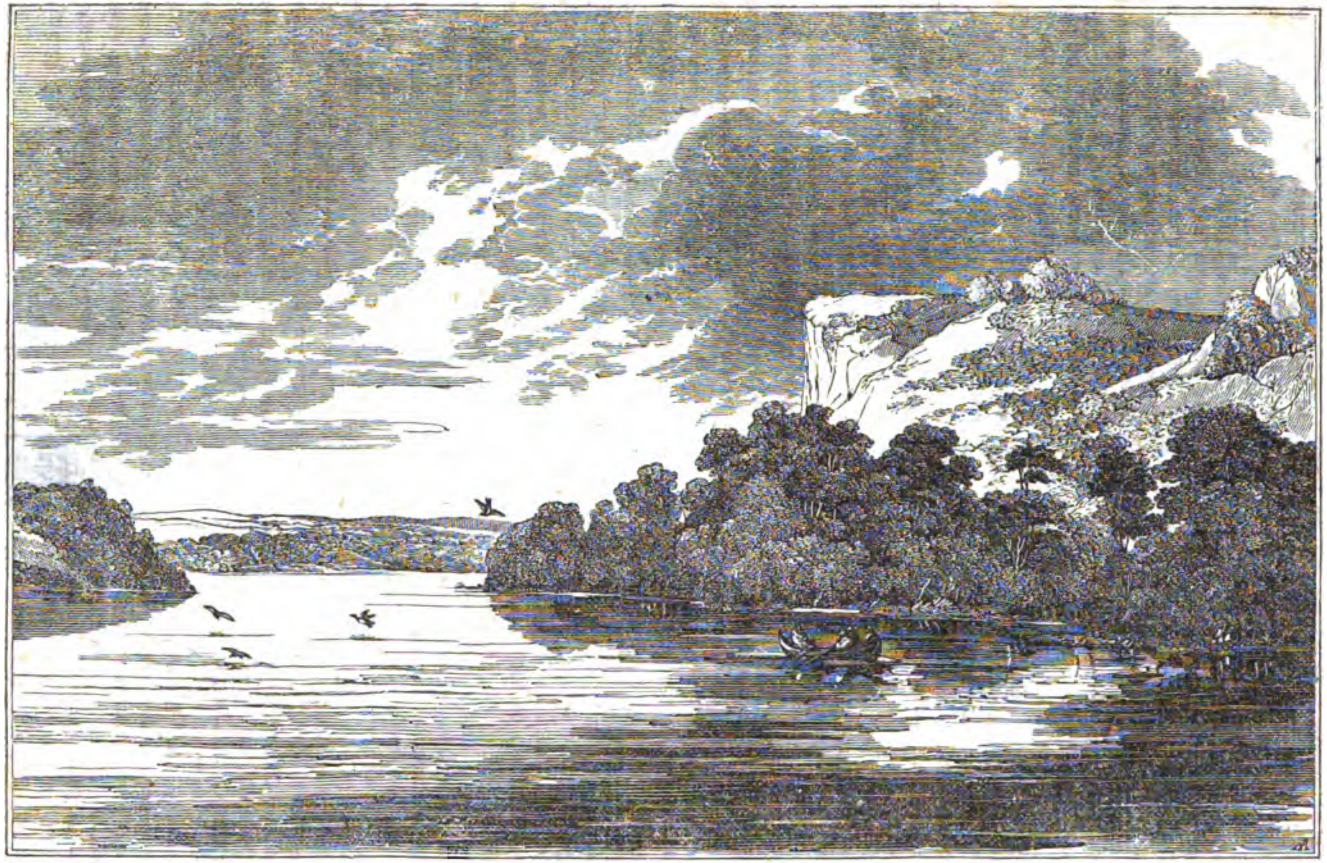
There is in kind and frank benevolence
A something which has power resistlessly
To steal into the triple-guarded breast,
Unlock the secret chambers of the soul,
And captivate the heart. A look, a smile,
A word of artless kindness oft hath wrought
A change mysterious as the wizard's wand—
A metamorphosis from hate to love!
 We cannot live within ourselves—we must
Partake, chameleon-like, a shadowy hue
Of that around us. 'Tis impossible,
That we should feel a cold indifference
At heart, when proffered friendship fondly smiles.
The affections of the sympathetick soul
Must kindly yield to kindness;—'tis the law
Of natural instinct. He, who feels it not,
With human feelings. Nature played a freak,
In giving semblance of a manly form,
To such a *Caliban* in soul. Beshrew
The heartless monster who accepts a deed
Of kind intent, and feels no kindly warmth
Of gratitude enkindle in his breast.
He is a thing *unique*—more senseless far
Than aught proverbial. Why e'en the ice
Relents, and melts beneath the smiling sun!
The cold and adamantine flint cannot
Withhold a warm and scintillating spark
Responsive to the greetings of the steel!
 Then why did Nature give the *foul ingrate*
A manly grace—why not, anomalous
In body as in soul, bestow on him
The hideous form, the horns, and cloven hoofs
Of Satan; date his origin from the
Pit Infernal: and write upon his brow,
In flaming characters,—Nature's Outlaw!

BLUE.

Dryden, N. Y.

HYPOCRISY.

He must have been a most impudent hypocrite who first wrote, "I am, sir, your most obedient, most humble, and devoted servant."



MAIDEN'S ROCK, ON THE MISSISSIPPI.

THE MAIDEN'S ROCK, LAKE PEPIN, ON THE MISSISSIPPI.

WINONA.

Lake Pepin* is an enlargement of the Mississippi River, of about twenty-one miles in length and generally two and a half in breadth, and situated a few miles below the Falls of St. Anthony. It is encircled by majestick bluffs, with the agreeable exception of an occasional opening of fine meadow-land. The surface of the lake presents a smooth and sluggish expanse of water, unchecked by a single island, extending itself, generally unruffled, nearly as far as the eye can reach. In a high wind, however, it is reputed of very dangerous navigation, and on such occasions the voyageurs warn you *le lac est petit, mais il est malin.* About halfway up the lake, its eastern bank rises to a height of near four hundred and fifty feet, of which the first one hundred and fifty are formed by a perpendicular bluff, and the lower three hundred constitute a very abrupt and precipitous slope, which extends from the base of the bluff to the edge of the water. The wildness of the scenery, and its contrast with the shores of the river below, render it one of the most interesting spots on this vast flood of water. There is here also, what we seldom meet with on the lengthened Mississippi, a high projecting point, a precipitous crag resting upon a steep bank whose savage features, singularly contrast with the peaceful lake whose waters lave its base. But the associations connected with this spot, invest it with a superiour interest, while at the same time, they throw a gloom over the bright features of the scene. It is remembered, as the theatre of one of the most melancholy incidents, that often occur in the history of the Indians. We give the tale in the simple language of a guide, who accompanied Major Long in his northern expedition.

"There was, in the village of Keoxa, in the tribe of Wapasha, during the time that his father lived and ruled over them, a young Indian female whose name was Winona, which signifies "the first-born." She had conceived an attachment for a young hunter who reciprocated it; they had frequently met, and agreed to a union in which all their hopes centred; but on applying to her family, the hunter was surprised to find himself denied, and his claims superseded by those of a warriour of distinction, who had sued for her. The warriour was a general favourite with the nation; he had acquired a name, by the services which he had rendered to his village when attacked by the Chippewas; yet, notwithstanding all the ardour with which he pressed his suit, and the countenance which he received from her parents and brothers, Winona persisted in preferring the hunter. To the usual commendations of her friends in favour of the warrionr she replied, that she had made choice of a man who, being a professed hunter, would spend his life with her, and secure to her, comfort and subsistence, while the warriour would be constantly absent, intent upon martial exploits. Winona's expostulations were, however, of no avail, and her parents having succeeded in driving away her lover, began to use harsh measures in order to compel her to unite with the man of their choice. To all her entreaties, that she should not be forced into a union so repugnant to her feelings, but rather be allowed to live a single life, they turned a deaf ear. Winona had at all times enjoyed a greater share in the affections of her family, and she had been indulged more, than is usual with females among Indians. Being a favourite with her brothers, they expressed a wish that her consent to this union should be obtained by persuasive means, rather than that she should be compelled to it against her inclination. With a view to remove some of her objections, they took means to provide for her future maintenance, and presented to the warriour all that in their simple mode of living an Indian might covet. About that time a party was formed to ascend from the village to Lake Pepin, in order to lay in a store of the blue clay which is found upon its banks, and which is used by the Indians as a pigment. Winona and her friends were of the company. It was on the very day that they visited the lake that her brothers offered their presents to the warriour. Encouraged by these, he again addressed her, but with the same ill success. Vexed at what they deemed an unjustifiable obstinacy on her part, her parents remonstrated in strong language, and even used threats to compel her into obedience. "Well," said Winona, "you will drive me to despair; I said I loved him not, I could not live with him; I wished to remain a maiden; but you would not. You say you love me; that you are my father, my brothers, my relations, yet you have driven from me the only man with whom I wished to be united; you have compelled him to withdraw from the village; alone, he now ranges through the forest, with no one to assist him, none to spread his blanket, none to build his lodge, none to wait on him; yet was he the man of my choice. Is this your love? But even it appears that this is not enough; you would have me do more; you would have me rejoice in his absence; you wish me to unite with another man, with one whom I do not love, with whom I never can be happy. Since this is your love, let it be so; but soon you will have neither daughter, nor sister, nor relation, to torment with your false professions of affection." As she uttered these words, she withdrew, and her parents, heedless of her complaints, decreed that that very day Winona should be united to the warriour. While all were engaged in busy preparations for the festival, she wound her way slowly to the top of the hill; when she had reached the summit, she called out with a loud voice to her friends below; she upbraided them for their cruelty to herself and her lover. "You," said she, "were not satisfied with opposing my union with the man whom I had chosen, you endeavoured by deceitful words to make me faithless to him, but when you found me resolved upon remaining single, you dared to threaten me; you knew me not if you thought that I could be terrified into obedience; you shall soon see how well I can defeat your designs." She then commenced to sing her dirge; the light wind which blew at the time, wafted the words towards the spot where her friends were; they immediately rushed, some towards the summit of the hill to stop her, others to the foot of the precipice to receive her in their arms, while all, with tears in their eyes, entreated her to desist from her fatal purpose; her father promised that no compulsive measures should be resorted to. But she was resolved, and as she concluded the words of her song, she threw herself from the precipice, and fell, a lifeless corpse, near her distressed friends. Thus, has this spot acquired a melancholy celebrity; it is still called the Maiden's Rock, and no Indian passes near it, without involuntarily casting his eye towards the giddy height, to contemplate the place, whence this unfortunate girl fell a victim to the cruelty of her relentless parents."

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* Father Hennipin was the first European who ever saw this lake. He reached it in 1680, and called it the "Lake of Tears, because," says he, "the savages who took us, consulted in this place what they should do with their prisoners; and those who were for murthering us, cried all the night upon us, to oblige, by their tears, their companions to consent to our death. Its waters are almost standing, the stream being hardly perceptible in the middle."

This tragedy was enacted many years ago. But we are told that "there were in the circumstances of this case, several conditions which tended to impart to it a peculiar interest; the maid was one who had been a favourite in her tribe; the warriour whom her parents had selected was one of note; her untimely end was a publick one; many were the witnesses to it; it was impressive in the highest degree; the romantick situation of the spot, which may be thought to have had some influence over the mind of a young and enthusiastick female, must have had a corresponding effect upon those who witnessed it." It did produce an indelible impression upon its witnesses; and the Indian now who has even received the tale from others, relates it with deep and unaffected feeling. It is one of those cases which show how completely the savage is swayed by passion, and presents at the same time a test of its sincerity and constancy.

The Hedgehog. It is said that the hedgehog is proof against poisons. M. Pallas states that it will eat a hundred cantharides without receiving any injury. More recently, a German physician, who wished to dissect one, gave it prussick acid, but it took no effect; he then tried arsenick, opium, and corrosive sublimate with the same results.

Doctors. The Louisville Journal, in speaking of a contemplated duel between two doctors of Cincinnati, advises them to load their pistols with their own pills and take aim at each other's mouths. The Journal thinks that in this way they will soon get *sick* of the business.

A hint to wives. "If I'm not at home from the party to-night, at ten o'clock," said a husband to his better and bigger half, "don't wait for me." "That I won't," said the lady significantly, "I won't wait, but I'll come for you." He returned at ten, precisely.

AN INDIAN STORY.

BY WILLIAM C. BRYANT.

"I know where the timid fawn abides
  In the depths of the shaded dell,
Where the leaves are broad and the thicket hides,
With its many stems and its tangled sides,
  From the eye of the hunter well.

"I know where the young May violet grows,
  In its lone and lowly nook,
On the mossy bank, where the larch tree throws
Its broad dark boughs, in solemn repose,
  Far over the silent brook.

"And that timid fawn starts not with fear
  When I steal to her secret bower,
And that young May violet to me is dear,
And I visit the silent streamlet near,
  To look on the lovely flower."

Thus Maquon sings as he lightly walks
  To the hunting ground on the hills;
'Tis a song of his maid of the woods and rocks,
With her bright black eyes and long black locks,
  And voice like the musick of rills.

He goes to the chase—but evil eyes
  Are at watch in the thicker shades;
For she was lovely that smiled on his sighs,
And he bore, from a hundred lovers, his prize,
  The flower of the forest maids.

The boughs in the morning wind are stirred
  And the woods their song renew,
With the early carol of many a bird,
And the quickened tune of the streamlet heard
  Where the hazels trickle with dew.

And Maquon has promised his dark-haired maid,
  Ere eve shall redden the sky,
A good red deer from the forest shade,
That bounds with the herd through grove and glade,
  At her cabin door shall lie.

The hollow woods, in the setting sun,
  Ring shrill with the fire-bird's lay;
And Maquon's sylvan labours are done,
And his shafts are spent, but the spoil they won
  He bears on his homeward way.

He stops near his bower—his eye perceives
  Strange traces along the ground—
At once, to the earth his burden he heaves,
He breaks through the veil of boughs and leaves,
  And gains its door with a bound.

But the vines are torn on its walls that leant,
  And all from the young shrubs there
By struggling hands have the leaves been rent,
And there hangs, on the sassafras broken and bent,
  One tress of the well-known hair.

But where is she who at this calm hour,
  Ever watched his coming to see,
She is not at the door, nor yet in the bower,
He calls—but he only hears on the flower
  The hum of the laden bee.

It is not a time for idle grief,
  Nor a time for tears to flow,
The horrour that freezes his limbs is brief—
He grasps his war axe and bow, and a sheaf
  Of darts made sharp for the foe.

And he looks for the print of the ruffian's feet,
  Where he bore the maiden away;
And he darts on the fatal path more fleet
Than the blast that hurries the vapour and sleet
  O'er the wild November day.

'Twas early summer when Maquon's bride
  Was stolen away from his door;
But at length the maples in crimson are died,
And the grape is black on the cabin side,—
  And she smiles at his hearth once more.

But far in a pine grove, dark and cold,
  Where the yellow leaf falls not,
Nor the autumn shines in scarlet and gold,
There lies a hillock of fresh dark mould,
  In the deepest gloom of the spot.

And the Indian girls, that pass that way,
  Point out the ravisher's grave;
"And how soon to the bower she loved," they say,
"Return'd the maid that was borne away
  From Maquon, the fond and the brave."

Happiness consists in the preservation of a firm and equal mind.—*Horace.*

CHYMISTRY.

Nitrogen with Hydrogen.

Ammonia. We come now to examine the affinity between nitrogen and hydrogen. These two gases may be *mixed* in any proportions; but there are no means known of causing them to unite *directly* in a more intimate manner. Such a compound may, however, be obtained *indirectly.* There is a saline body, well known in the arts by the name of *sal-ammoniack:* if some of this salt be finely pounded, and mixed with an equal quantity of unslaked quick lime, in powder, and introduced into a tube or retort, upon the application of a gentle heat, it will give out an extremely pungent smell, well known as arising from spirits of hartshorn. This proceeds from the evolution of a gas, which is rapidly absorbed by water, and therefore cannot be collected, as the gases we have hitherto treated of, over that liquid. It may however, be obtained in jars filled with mercury, in a similar way to the water bath; and various forms of apparatus have been contrived to facilitate the operation in this and similar instances, and to economise the mercury, which is an expensive article. Its principal properties may, however, be exhibited by collecting it in a prepared bladder, made thin by scraping, and furnished with a stop-cock, which may be attached to the mouth of the retort containing the above mixture. It will become inflated as the gas is given off; and it may be preserved for a short time by closing the cock and detaching the glass. This elastick fluid is called ammonia.

An animal plunged into it immediately dies, and the flame of burning bodies is extinguished by it. The flame of a taper becomes enlarged, with a kind of yellow halo before it goes out, showing an inclination of the gas itself to burn; and if a small jet of it be introduced into a jar of oxygen, it may be inflamed—the product of the combustion being water and nitrogen.

It is very much lighter than common air, 100 cubick inches only weighing 18.05 grains.

It changes the blue colour of vegetables to green, and yellows to brown; but not permanently, for as the gas escapes the original colour returns.

Ammonia may be resolved into nitrogen and hydrogen gases, by passing it through a red hot tube; and more rapidly, if the heated surface over which it is driven be increased by iron-wire coiled up in the tube. The experiment may be made in the apparatus before described, by filling a bladder with the gas, expelling it through the heated tube by pressure, and receiving the nitrogen and hydrogen in a jar upon the water-bath. A mixture of ammonia and oxygen may be inflamed by the electrick spark, just as a mixture of oxygen and hydrogen. The mere passing electrick sparks through it also effects its decomposition. By this process its bulk is gradually enlarged, and when two or three hundred discharges have passed through a cubick inch of it, it will be found to have doubled its volume.

Two volumes of ammonia produce, by their decomposition, 4 volumes; consisting of 3 volumes of hydrogen, and 1 volume of nitrogen.

Now, 150 cubick inches of hydrogen weigh - - - - -	3.15 grs.
and 50 ditto nitrogen - - -	14.9 grs.
Together	18.05

which, as 2 volumes are condensed into 1, will be the weight of 100 cubick inches of ammonia, and agrees with the direct experiment. Its constitution, therefore, by weight is—

One equivalent of nitrogen - . -	14
Three ditto hydrogen - - -	3
and its equivalent	17

The solution of ammonia in water is commonly known by the name of liquid ammonia; but incorrectly, as the pure gas is capable of assuming the liquid form under high pressure, equal to that of 6½ atmospheres, or 195 inches of mercury.

The aqueous solution of ammonia, which is an article of great importance and extensive use, may be prepared by passing the gas, as it is formed, directly into water, which, at the temperature of 50°, will take up 670 times its volume; its bulk is thereby increased, and its specifick gravity diminished: that of a saturated solution is .875, water being 1000.

The solution may be more conveniently prepared by the following process:—On 9 ounces of well-burnt lime pour half a pint of pure water; and when it has remained in a well-closed vessel about an hour, add 12 ounces of *sal-ammoniack* in powder, and three pints and a half of boiling water. When the mixture has cooled, pour off the clear portion, and distil from a retort 20 fluid ounces. The specifick gravity of this solution is .954.

It possesses the peculiar pungent smell, taste, and alkaline properties of the gas itself, and has the same action upon vegetable colours.

We have thus arrived at the knowledge of two principal compounds of nitrogen, of the directly opposite qualities which characterize two great classes of bodies called *acids* and *alkalies.* The first, with 5 proportions of oxygen, constituting the nitrick *acid,* intensely sour, corrosive, and turning the blue colour of vegetables red; the second, with 3 proportions of hydrogen, producing the volatile *alkali,* or ammonia, hot, bitter, caustick, converting vegetable blues to green, and yellows to brown.

It will, we conceive, greatly facilitate the comprehension of the subjects of affinity and definite proportion, if we stop to illustrate them, by considering the further combination of these two bodies together; although it does not enter into our general plan to examine the properties of bodies of this class, till we have completed the list of simple substances, and their binary compounds.

By carefully dropping a solution of ammonia into diluted nitrick acid, they will neutralize each other; and the exact point of saturation may be ascertained, by dipping into the solution, from time to time, small slips of paper stained with litmus and turmerick: when these colours are no longer affected, the neutralization is complete. The solution will now be neither acid, corrosive, alkaline, nor caustick; but its taste will be saline and bitter. If the liquor be carefully evaporated at a temperature not exceeding 100°, it will shoot, on cooling, into prismatick crystals. The salt so produced is called nitrate of ammonia, and is a definite compound of nitrick acid, ammonia, and water. Its proportions have been very carefully ascertained to be in 100 parts,

acid	-	67.63
alkali	-	21.14
water	-	11.23
		100

which are in proportion to each other as

1 equivalent	nitrick acid - - - -	54
1 ditto	ammonia - - -	17
1 ditto	water - - - - -	9

the numbers for which were formerly obtained from the direct combination of the elements of each.

Water thus combined with a salt is called its *water of crystallization*: it is essential to its existence in the crystalline state, but may be generally expelled by heat, leaving the *anhydrous* salt in an amorphous (or shapeless) state, but with all its properties unchanged.

This it is difficult to effect in the present instance, as the salt is very easily decomposed by heat, and at a temperature of 600 explodes, being wholly resolved into its elements.

The results of its decomposition at a lower temperature we have already shown, in describing the formation of the protoxide of nitrogen; and this process may now be understood.

Nitrate of ammonia, which is melted at a gentle heat, is composed of

1 equivalent nitrick acid, 54	1 equ. nitrogen, 5 do. oxygen,	14 40
1 equivalent ammonia, 17	1 equ. nitrogen, 3 do. hydrogen,	14 3

or, in other words, the salt is composed of

2 equivalents	nitrogen - - - -	28
3 do.	hydrogen - - - -	3
5 do.	oxygen - - - -	40

In this decomposition the 3 proportions of hydrogen take 3 of oxygen, and form water; and the remaining 2 proportions of oxygen combine with the 2 of nitrogen, and produce the protoxide of nitrogen: and these are the only products.

It is almost impossible for the least contemplative mind not to be struck with admiration at the harmonious simplicity of the laws upon which these transmutations depend: and the feeling of satisfaction which their developement produces is part of that pure delight which, independently of more substantial advantages, rewards the diligent student of the works of nature.

ON CHLORINE.*

Chlorine, the last of the four aeriform elements which we have enumerated, belongs, with oxygen, to the electro-negative class; being evolved from all its compositions, except with oxygen, at the positive pole of the Voltaick pile. It may be obtained as follows: Mix three parts of sea-salt finely pounded with one of peroxide of manganese—a substance well known in several of the arts by the name of black manganese; pour upon them in a retort two parts of sulphurick acid diluted with an equal weight of water: by the action of a gentle heat the gas will be given off. It may also be obtained by the action of muriatick acid upon the same oxide.

Cold water dissolves about twice its volume of chlorine; and mercury rapidly combines with it. It is best collected over warm water; and the waste from absorption may be diminished by leading the pipe, by which it is conducted, to the top of the jar; as was before recommended for the protoxide of nitrogen. It may be preserved in bottles with glass stoppers well greased, taking care that the water is wholly expelled from them.

It possesses a yellowish green colour, an astringent taste, and a most suffocating smell; all of which qualities are communicated to its aqueous solution. If received into the lungs, its action is extremely painful and injurious.

It is considerably heavier than common air: 100 cubick inches weigh 76.3 grains.

When a burning taper is introduced into it, it is quickly consumed with a dull red flame, which throws off a dense black smoke: phosphorus spontaneously ignites in it, and burns with a pale white flame; and several of the metals, in a finely-divided state, or in thin leaves, inflame: and in this way tin, copper, and zinc, exhibit a beautiful appearance.

Chlorine mixed with the vapour of water, as it is usually obtained, assumes the liquid form at a temperature of 40°; and when surrounded with snow or pounded ice, concretes into a solid of a yellowish colour; which is deposited upon the sides of the receiver, like the effects of frost upon the surface of windows. If the gas be artificially dried by passing it over substances which abstract vapour, as a salt known by the name of muriate of lime, the most intense artificial cold produces no effect upon it. Strong compression, equal to four atmospheres, will, however, reduce it to the liquid form. It has no acid properties: it is not sour, and it does not change the blue colour of vegetables to red; but it destroys all animal and vegetable colours, and is a most important agent in the art of bleaching. This, however, it can only effect when water is present. If a piece of dry litmus paper be introduced into a jar of dry chlorine, it will suffer no change; but if previously wetted, the colour will speedily disappear. The colours of printed calico may readily be discharged by the same means.

CHLORINE AND HYDROGEN.

Muriatick Acid. Chlorine and hydrogen may be mixed together; and if carefully excluded from the light of day, will remain without change. If the mixture be made with equal volumes of the two and exposed to light, they will gradually combine; the chlorine will lose its peculiar colour and smell, and a powerfully acid gas will result, without any change of volume. If the mixture be made in a stout phial, with a well-fitted stopper, secured by wrapping a cloth round the neck, and exposed to the direct rays of the sun, the combination will take place suddenly and with detonation. When the stopper is afterwards withdrawn under mercury, it will be found that no condensation has taken place; but if under water, it will instantly rush in and fill the phial—as the new compound is rapidly absorbed by that liquid. The mixture may also be exploded by flame, or the electrick spark.

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* From a Greek word, signifying "green," from its colour.

To this compound the name of muriatick acid has been given, and it is sometimes called hydrochlorick acid. As the elements combine without condensation, its specifick gravity must be the mean between those of its two ingredients.

50 cubick inches of chlorine weigh - - - - -	38.10 grs.
50 ditto of hydrogen - -	1.05
100 cubick inches of muriatick acid must therefore weigh - - - - -	39.15

which agrees very nearly with direct experiment.

Muriatick acid gas is best obtained by the action of strong sulphurick acid upon an equal weight of sea salt: it is given off in great purity, but must be collected over mercury.

The properties of such gases as are rapidly absorbed by water, may be examined without a regular mercurial apparatus, by means of a glass tube from half to three quarters of an inch diameter, and from four to ten inches in length. It is closed above, but open at the lower extremity, and turned up. It may be filled with mercury, and is then to be supported with a saucer beneath it. The soluble gas may be produced in a small tube, or retort, drawn out, and fixed in such a way that the end may be introduced at the mouth so far as to allow the bubbles to pass into the tube, and the mercury to flow out into the saucer. When the metal has descended nearly to the bend, the operation should be stopped. Small portions of the gas so collected, may afterwards be examined, by placing the finger upon the aperture in contact with the mercury, so as to exclude all air. By inclining the tube, a bubble of the gas may be made to pass round the bend towards the finger; and upon replacing the tube in the perpendicular position, the larger quantity will still be in the upright part, and a small quantity confined between the mercury and the finger, and quite unconnected with the former. This quantity may thus be conveniently experimented upon.

Muriatick acid gas is colourless, of a very pungent smell, and intensely acid taste.

Its attraction for water is so great, that when a little of it escapes into the air, a white cloud is instantly formed by its combining with the atmospherick steam.

It extinguishes flame and is incombustible.

It instantly reddens blue vegetable colours.

It has been reduced to a liquid state by a pressure amounting to that of 40 atmospheres.

Water, at the temperature of 40°, will absorb of it about 480 times its volume, and thereby increases its bulk. The solution is commonly known by the name of muriatick acid, and is largely employed for chymical purposes. It may be prepared by passing the gas, produced as above, immediately into water; or by adding a sufficiency of water to the sulphurick acid in the first instance, and then distilling. The solution, when pure, is perfectly colourless, and it possesses all the acid properties and smell of the gas. Its specifick gravity is greater than that of water, and when it amounts to 1.920 (water being considered 1.00) 100 parts contain 28.3 of real acid.

When muriatick acid is brought into contact with some oxides, they part with a portion of their oxygen, which forms water with its hydrogen, and chlorine is evolved: it is thus that the process previously described for obtaining chlorine with oxide of manganese may be explained.

The muriatick acid is the only known compound of chlorine with hydrogen.

CHLORINE AND OXYGEN.

Protoxide of Chlorine. Chlorine and oxygen have but a feeble affinity for each other; but four distinct compounds of the two elements may be obtained by indirect means. They are never found in nature, and are subjects of instruction and curiosity rather than of use in the arts.

There is a salt to which we have before referred, and the formation of which will be hereafter described, known by the name of *chlorate of potash:* when this salt is heated in a retort, with very weak muriatick acid, a gas may be collected over mercury: but as it is very apt to explode, the application of a naked flame to the retort should be avoided, and the heat is best applied by the medium of water. It differs very materially from chlorine.

Its colour is much deeper, and is of a brighter yellow tint: its smell is intermediate between that of burnt sugar and chlorine.

It explodes by the application of a very gentle heat, not exceeding that of the hand, and is decomposed. Five volumes become expanded to 6, consisting of a mixture of chlorine and oxygen, in the proportions of 4 of the former to two of the latter; the oxygen in the compound being condensed into half its bulk. These proportions prove that it is a compound by weight of

1 equivalent of chlorine - - - -	36
1 ditto oxygen - - - -	8
Its number therefore is	44

It may be called the protoxide of chlorine.

Water dissolves eight or ten times its bulk of this gas, and takes an orange tint, but it does not act upon mercury.

It discharges all vegetable colours. Phosphorus upon being plunged into it takes fire, and causes it to explode.

It may be mixed with hydrogen, and exploded by the electrick spark, and muriatick acid and water are the products.

Peroxide of Chlorine. Another combination of chlorine and oxygen may be obtained by operating upon *chlorate of potash* with sulphurick acid: 50 or 60 grains of the salt in powder may be mixed with strong sulphurick acid into a paste. The mixture will assume a bright orange colour. It may be placed in a small retort, or bent tube, which should be immersed in water, and gently heated, taking care to keep it under 212°, or the boiling point. A gas will be given off, which may be received over mercury, on which it has no action at common temperature.

Its colour is also yellow, but brighter than that of the protoxide, and it is still more rapidly absorbed by water. The solution is deep yellow, and its taste not sour, but strongly astringent and disagreeable: it is decomposed by the action of light. The smell of this gas is peculiar and aromatick, and quite different from that of chlorine. It explodes with great violence if heated to a temperature above 114°, and its volume is thereby increased by one-half. The products are chlorine and oxygen, in the proportions of 1 volume of chlorine to 2 of oxygen. It is, therefore, composed of

1	equivalent of chlorine	36
4	ditto oxygen	32
	and its number is	68

It may be called the ***peroxide*** of chlorine. Phosphorus spontaneously ignites in it, and causes it to explode.

Chlorick acid. The combination of chlorine with a further proportion of oxygen constitutes an acid, which may be obtained by decomposing a salt, which will be hereafter described, called ***chlorate of barytes***, by elective affinity with dilute sulphurick acid. Great care must be taken not to use an excess of sulphurick acid; which may be dropped into a solution of the chlorate in water, as long as any white precipitate appears. The clear liquor which remains, after the process is complete, should be cleansed from the sediment; it consists of a solution of ***chlorick acid*** in water. It may be concentrated by careful evaporation till it acquires an oily consistency.

It is colourless; its taste acid and astringent; and its smell, when warmed, pungent. It reddens the colour of blue vegetables. The chlorick and muriatick acids decompose each other, and, if mixed in proper proportions, they are each resolved into chlorine by the union of the oxygen and hydrogen, with which they are severally combined. Chlorick acid is composed of

1	equivalent of chlorine	36
5	ditto oxygen	40
	and its number is	76

Perchlorick acid. A compound of chlorine, with a further proportion of oxygen, has been discovered, but very little examined. It has been obtained in the state of an acid liquor, and has been called ***perchlorick acid.*** It is supposed to be composed of

1	equivalent chlorine	36
8	ditto oxygen	64
	making its number	100

CHLORINE AND NITROGEN.

Chloride of Nitrogen. Chlorine and nitrogen have but a very slight affinity for each other; but they may be obtained in union by passing chlorine through a solution of nitrate of ammonia at a temperature of about 90°. The chlorine is rapidly absorbed, and an oily film appears on the surface of the solution, which collects into yellowish drops, and sinks to the bottom of the vessel.

This oily liquid is the most powerfully explosive compound known, and should not be experimented upon in quantities larger than a grain of mustard-seed; and even then it should be handled with extreme caution. Its specifick gravity is 1.653, and it does not become solid at great degrees of artificial cold. At a temperature of about 200° it explodes; but the mere contact of some combustible substances, at ordinary temperatures, causes it to detonate. When a globule is thrown into olive oil, or turpentine, it explodes so violently as to shatter any glass vessel. The products of its decomposition are chlorine and nitrogen, and its composition has been inferred to be

1	equivalent nitrogen	14
4	ditto chlorine	144
	making its number	158

The name of chloride of nitrogen has been given to it: the chymical nomenclature conferring the appellation of ***chloride*** upon the combinations of chlorine with all bodies except oxygen, which have not acid properties: and as the analogous compounds of oxygen, when in more than one proportion, are distinguished by prefixing the Greek numerals, so the ***chlorides*** of different proportions are called ***proto***-chloride, ***deuto***-chloride, &c.

NATURAL HISTORY.

METHOD OF CAPTURING WILD DUCKS.

The decoys used in England, particularly in the fens of Lincolnshire are superiour to any method of catching wild ducks with which we are acquainted. A circumstantial account of this process is given by Bewick, and illustrated by our wood cut.

In the lakes to which the wild ducks resort, their most favourite haunts are observed. Then in the most sequestered part of this haunt, a ditch is cut, which is about four yards across at the entrance, and decreases gradually in width from the entrance to the farther end, which is not more than two feet wide. The ditch is of a circular form, but does not bend much for the first ten yards. The banks of the lake on each side of this ditch (or "pipe," as it is called) are kept clear from reeds, coarse herbage, &c., in order that the fowl may get on them to sit and dress themselves. Along the ditch poles are driven into the ground, close to its edge, on each side, and the tops are bent over across the ditch and tied together. These poles, thus bent, form at the entrance of the ditch or pipe an arch, the top of which is ten feet distant from the surface of the water. This arch is made to decrease in height as the pipe decreases in width, so that the remote end is not more than eighteen inches in height. The poles are placed about six feet from each other, and connected by poles laid lengthwise across the arch and tied together. Over the whole is thrown a net, which is made fast to a reed-fence at the entrance and nine or ten yards up the ditch, and afterwards strongly pegged to the ground. At the end of the pipe farthest from the entrance is fixed a "tunnel-net," as it is called, about four yards in length, of a round form, and kept open by a number of hoops, about eighteen inches in diameter, placed at a small distance from each other to keep it distended. Supposing the circular

Catching Wild Ducks.

bend of the pipe to be to the right when one stands with his back to the lake, then on the left hand side a number of reed-fences are constructed, called "shootings," for the purpose of screening the "decoy-man" from observation, and in such a manner that the fowl in the decoy may not be alarmed while he is driving those that are in the pipe. These shootings, which are ten in number, are about four yards in length, and about six feet high. From the end of the last shooting a person cannot see the lake, owing to the bend of the pipes, and there is then no further occasion for shelter. Were it not for these shootings, the fowl that remain about the mouth of the pipe would be alarmed if the person driving the fowl already under the net should be exposed, and would become so shy as entirely to forsake the place. The first thing the decoy-man does when he approaches the pipe is to take a piece of lighted turf, or peat, and hold it near his mouth, to prevent the birds from smelling him. He is attended by a dog, trained for the purpose of rendering him assistance. He walks very silently about half-way up the shootings, where a small piece of wood is thrust through the reed-fence, which makes an aperture just large enough to enable him to see if any fowl are in; if not, he walks forward to see if any are about the entrance of the pipe. If there are, he stops and makes a motion to his dog, and gives him a piece of cheese, or something else, to eat; and, having received this, the animal goes directly to a hole through the reed-fence, and the birds immediately fly off the bank into the water. The dog returns along the bank between the reed-fences, and comes out to his master at another hole. The man then gives him something to reward and encourage him, and the animal repeats his round until the birds are attracted by his motions, and follow him into the mouth of the pipe. This operation is called "working" them. The man now retreats farther back, working the dog at different holes until the ducks are sufficiently under the net. He then commands his dog to lie down behind the fence, and going himself forward to the end of the pipe next the lake, he takes off his hat and gives it a wave between the shooting. All the birds that are under the net can then see him; but none that are in the lake can. The former fly forward, and the man then runs to the next shooting and waves his hat, and so on, driving them along until they come to the tunnel-net, into which they creep. When they are all in, the man gives the net a twist, so as to prevent them from getting back. He then takes the net off from the end of the pipe, and taking out, one by one, the ducks that are in it, dislocates their necks. The net is afterwards hung on again for the repetition of the process; and in this manner five or six dozen have sometimes been taken at one drift. When the wind blows directly in or out of the pipes the fowl seldom work well, especially when it blows into the pipe. The reason of this is, that the ducks always prefer swimming against the wind, otherwise the wind blowing from behind catches and ruffles their feathers. If many pipes are made in the same lake, they are so constructed as to suit different winds and are worked accordingly. The better to entice the fowl into the pipe, hemp-seed is occasionally strewn on the water. The season allowed by Act of Parliament for taking ducks in this way is from the latter end of October until February.

Willughby states that formerly before the young ducks took flight, or while the old ones were in moult and unable to fly, they were driven by men in boats furnished with long poles, with which they splashed the water, between long nets stretched vertically across the pools in the shape of two sides of a triangle, into lesser nets placed at the point, and in this way he says that 4000 were taken at one drive in Deeping Fen; and Latham has recorded an instance in which 2646 were taken in two days near Spalding, in Lincolnshire; but these practices being considered injurious, were prohibited by statute in the reign of George II.

Tame ducks are also used for the purpose of leading the way into the pipe. Hence the term "decoy-ducks." These birds are fed on the pond, and made quite tame, and come to the keeper's whistle, to eat the hemp-seed which he strews on the pond. They generally lead the way into the pipe when whistled to. As they are used to the sight of the keeper, they do not rush forward with the wild ones into the net, but return back again safe into the pond; or if any of them should be driven forward, they are easily, by their colour, distinguished from the wild ones.

Although our account more particularly relates to the bird in its wild state, it will not be improper to mention that the rearing of ducks is made an object of great importance in China. The greater part of them are hatched by artificial warmth; the eggs being laid in boxes of sand, are placed on a brick hearth, to which a proper degree of heat is given during the time required for hatching. The ducklings are fed with craw-fish and crabs, boiled and cut small, and afterwards mixed with boiled rice; and in about a fortnight they are able to shift for themselves. The Chinese then provide them with an old stepmother, who leads them where they are to find provender, being first put on board a "sampane," or boat, which is destined for their habitation, and from which the whole flock, often 300 or 400 in number, go out to feed, and return at command. This method is used nine months out of the twelve, for in the colder months it does not succeed; and is so far from a novelty that it may be seen everywhere, more especially about the time of cutting the rice, when the masters of the duck-boats row up and down the rivers, according to the opportunity of procuring food, which during that season is found in plenty, at the ebb of the tide, on the rice plantations, which are overflowed at high water. It is curious to see how the ducks obey their master; for some thousands belonging to different boats will feed at large on the same spot, and on a signal given, follow the leader to their respective boats, without a stranger being found among them.

SOLAND GOOSE.

The southern and western sides of the Shiant Islands, says a recent traveller in Scotland, exhibit little of the basaltick formation. The perfect stillness of the water afforded us a good opportunity of witnessing the mode in which the Soland goose, the albatross of the northern seas, drops for fish. Towering to a great height, the bird folds its wings, and descends, head-foremost, with prodigious velocity into the water, which resounds as if a large stone had fallen into it, and recovers its smoothness before the bird reappears, usually bringing a fish in its beak. The Soland goose destroys a great quantity of herrings. The head, neck, and shoulders of this bird are exceedingly tough and strong; so much so as to resist al small shot, but slugs or swan. The cormorant is equally thick-skinned, and extremely full of blood, of which the natives of the Hebrides are said to make a soup, somewhat resembling hare-soup, the standard dish of the eastern coast of Scotland, little known on the western, on account of the rarity of hares. It is remarkable that hares were unknown on the western coast of Scotland, till their migration to it was facilitated by the military roads. The cormorant is said to have been anciently used in Scotland as a whet to the appetite before dinner. The young of the kitty wake gull was eaten for the same purpose.

FIRE-FLIES.

June 29th.—The individual who has occasion to walk out a short distance beyond the boundaries of our city an hour or two after the sun has set, just when the shadows of night have spread deeply over the land, will have ample cause for surprise and admiration in the countless myriads of fire-flies that are to be seen, spangling the night with their airy lamps, and more particularly so, should the pathway lead him into the neighbourhood of some deep morass, or standing pool; then should he pause for a few moments to contemplate the brilliant magnificence of the scene, his attention will not fail to be drawn to the seemingly undetermined, and deviating course of their flight, though now and then he will have cause to observe some one or more of them, darting through the air like an eagle swooping for its prey, leaving a long stream of splendour behind them in their trail, and having too, in my opinion, the same object also in view, as that of this kingly bird. These little fire-flies, independently of the interest they give to a scene of the night, may truly be considered in the light of benefactors of the human race, for their natural food consists chiefly of gnats and moschotoes, vast numbers of which they devour, and this in a great measure may account for the prodigious multitudes in which they are seen, assembled about wet, and moist shady situations. The insects which furnish them food, had previously selected these wet places to deposite their eggs; the larva of which, being unable to exist elsewhere, soon emerge into the open air in a perfect state, leaving their light barks, which have now become of no further use, to drift about upon the surface of the pool from whence they sprung, and as they are immediately seized and speedily devoured by the watchful fire flies, long ere they could have an opportunity of even once beholding the light of day. Various indeed have been the speculations respecting the motives that this species of lampyris have in emitting this light. Without considering them as ornamenting the universe, and by that means rendering themselves delightful objects for the contemplation of man, I think their principal design is to allure and direct the course of the male fly, which are not endued with light, or possess it in a very feeble degree. In searching among densely leaved vegetables, in moist shady situations, I have invariably discovered amongst those which emit the light, one or more, of what I conceive to be the male fly, though much fewer in number, and possessing wings. They may readily be distinguished by their smaller size, and having the elytra of an entire black; the markings on the thorax however, correspond in a great degree. These insects are to be observed most numerous just as the darkness sets in, flying very low, but as midnight approaches, they become more scattered, and then gradually put out their lights.

Zodiac.

BOTANY.

THE LARGE FLOWERING SENSITIVE PLANT.

(Mimosa grandiflora.)

This splendid shrub grows wild, both in the East and West Indies. It is frequently found in the mountains of Jamaica, and was introduced into England in 1769, by Mr. Norman. It belongs to the same tribe as the common sensitive plant, but does not possess the power of closing its leaves at the approach of danger, in nearly so high a degree as its less splendid companion. We must all have noticed the folding back of the leaves, and the rolling up of the flowers, of many well known plants, in the evening, or at the approach of rain, and their subsequent expansion in the morning, or after the passing by of the shower. But the sensitive plants include within themselves a power of motion far exceeding this, and approaching, in appearance, the voluntary movements of an animal. The origin of this singular power has never yet been discovered, although numerous experiments have been made, to ascertain the fact. These experiments all tend to demonstrate the infinite variety of ways, in which the Creator of all things has furnished every object of his creation with the means of self-preservation.

We have already alluded to the periodical closing of the leaves of plants: the same motion takes place in the sensitive plants, but the wonderful fact in the history of the latter is, that this movement can be produced at any time; and by merely touching the leaves gently, they will instantly recoil, and fold themselves together, as if for self-protection; and at the same time, the small twig which sustains the leaves, approaches the main stem. If the touch has been forcible, not only the twig supporting one series of leaves is affected, but the same effects take place in the compound leaf, on the opposite side of the stem, and this motion is sometimes communicated to the whole plant.

The Sensitive Plant.

It is very difficult to touch the leaf of a healthy sensitive plant so lightly as not to make it close: after the leaves are closed, some time elapses before they regain their original position, and the duration of this interval depends on the time of day, the season of the year, and the more or less healthy state of the plant. It seems, however, that light is an agent necessary to the production of some of these movements.

In the month of August, a sensitive plant was carried in a pot from its usual situation, into a dark cave; the motion it received in carriage, caused it to close its leaves, and they did not open until four-and-twenty hours afterwards: by this time they had become moderately open, but were afterwards subject to no changes at night or morning, remaining three days and nights with their leaves in the same state. At the end of this time it was brought out again into the air, where the leaves recovered their natural periodical motions, shutting every night, and opening every morning, as naturally and strongly as ever: but although while in the cave, their periodical motions were suspended, they shrunk from the touch with almost as much power as when in the open air.

Although a sensitive plant is, as we have seen, easily affected by the slightest touch, and closes when subjected to a heavy fall of rain, it remains unmoved if only exposed to a gentle shower. If the leaves are touched with sufficient force, the branches are also affected, but it is possible, if the experiment is carefully performed, to cause the branch to move towards the stem, the leaves still remaining in their original position with reference to each other; thus proving, that the power of motion belonging to each part of the plant is independent of that possessed by any other part.

The same species of irritability has also been noticed, in many other plants; one instance occurs in the flower of the common barberry. The experiment was made on a bush in full flower (it was about one o'clock, the day was bright and warm, with very little wind,) and is thus related by Dr. Smith:—

"The stamina of such of the flowers as were open were bent backwards to each petal, and sheltered themselves under their concave tips. No shaking of the branch appeared to have any effect upon them. With a very small bit of stick I gently touched the inside of one of the filaments, which instantly sprung from the petal with considerable force, striking its anthera against the stigma. I repeated the experiment a great number of times in each flower, touching one filament after another, until the tips of all six were brought together in the centre over the stigma.

"I took home with me three branches laden with flowers, and placed them in a jar of water, and in the evening tried the experiment on some of these flowers, then standing in my room, with the same success.

"This irritable power appears, however, to reside only in the inside of the filament, as when touched in any other part it remained unmoved."

THE SIDE-SADDLE FLOWER.

(*Sarracenia purpurea Linn.*)

"This singular flower," says the naturalist of the Albany "Zodiac,"* blooms in June most profusely in the sphagnous pools about our city. In order to thrive well, they require a regular supply of moisture, which the situations where they grow are not at times capable of yielding, therefore nature has most admirably supplied this deficiency, by giving to the leaves a cup-like form, and arranging them in a whorl around the base of the flower stem, with their orifices upward, in order to catch the falling rains, and by that means they serve as cisterns for nourishing the plant throughout the driest seasons. The largest of these leaves are sufficiently able to contain about half a pint of water, and they are generally half-filled at all times. But its wants are not yet all supplied, for it becomes necessary to its healthy existense, that it should require a certain portion of animal substance, and here again we discover a most wonderful provision in nature, the mouth of this cup-like leaf becomes gradually contracted, and is furnished beneath with an expanded lip, the inside of which, and the throat, are provided with a great number of rigid spines projecting inwards, similar to the entrance of a wire mouse-trap, so that insects being enticed to enter by a peculiar odour within, are ever after unable to escape, and in a short time they perish by drowning. In this manner all their necessities are amply supplied. I opened several of these leaves, and in each one I invariably obtained about a thimble-full of the remains of insects, belonging principally to the Coleoptera order.

[Concluded from page 113.]

JOURNAL OF CAPTAIN ROSS.

"This was a most satisfactory day: for we had given up all expectations of meeting inhabitants in this place; while we knew that it was to the natives that we must look for such geographical information as would assist us in extricating ourselves from our difficulties and in pursuing our course. It was for philosophers to interest themselves in speculating on a horde so small, and so secluded, occupying so apparently hopeless a country, so barren, so wild, and so repulsive; and yet enjoying the most perfect vigour, the most well-fed health, and all else that here constitutes, not merely wealth, but the opulence of luxury; since they were as amply furnished with provisions, as with every other thing that could be necessary to their wants."

On the next day, the captain proceeded to pay a visit to the native village.

"The village soon appeared, consisting of twelve snow-huts, erected at the bottom of a little bight on the shore, about two miles and a half from the ship. They had the appearance of inverted basins, and were placed without any order; each of them having a long crooked appendage, in which was the passage, at the entrance of which were the women, with the female children and infants. We were soon invited to visit these, for whom we had prepared presents of glass beads and needles; a distribution of which soon drove away the timidity which they had displayed at our first appearance.

"The passage, always long, and generally crooked, led to the principal apartment, which was a circular dome, being ten feet in diameter when intended for one family, and an oval of fifteen by ten where it lodged two. Opposite the doorway there was a bank of snow, occupying nearly a third of the breadth of the area, and two feet and a half high, level at the top, and covered by various skins; forming the general bed or sleeping place for the whole. At the end of this sat the mistress of the house opposite to the lamp, which, being of moss and oil, as is the universal custom in these regions, gave a sufficient flame to supply both light and heat; so that the apartment was perfectly comfortable. Over the lamp was the cooking dish of stone, containing the flesh of deer and of seals, with oil; and of such provision there seemed no want. Everything else, dresses, implements, as well as provisions, lay about in unspeakable confusion, showing that order, at least, was not in the class of their virtues. * * * *

"Of these huts, built entirely of snow, I must add, that they were all lighted by a large oval piece of clear ice, fixed about halfway up on the eastern side of the roof; while the variations among the different ones that we inspected were trifling. But we saw afterwards, what had escaped us before when there was so little light to discern anything, that about the middle of each passage was an antechamber leading into a recess for the dogs. It was obvious, too, that the external aperture could be turned at any time, so as to be always on the lee side, and thus prevent the wind from entering. We found that these huts had been but just erected; they were scarcely a day old; so that the architectural processes of this country did not occupy much time. It was also ascertained that their winter stock of seal and raindeer was buried in the snow, that this store was laid up in the summer, and that they returned to it in the winter. Hitherto, this practice had not been found among the natives of these countries; whether overlooked or not, we could not decide.

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* The Zodiac is the title of a new monthly journal commenced in July, at Albany by E. Perry. Without any flourish of trumpets to herald its approach, this highly promising journal has at once taken its station amongst the first of our literary constellations. First rate talent as is abundantly apparent, is interested in its support. The "Naturalist's Every-day Book," is not unworthy of a Linneus.

"The females were certainly not beautiful; but they were, at least, not inferiour, to their husbands, and were not less well-behaved. All above thirteen years of age seemed to be married; and there appeared three or four such in every house, whether belonging to one establishment or not, we were not sure, but appearing to be the young wives in a house where there was one old one. Their stature was short, and they were much inferiour in dress and neatness to the men; their hair especially being in a matted and disordered state. Their features were mild, and their cheeks, like those of the men, ruddy; one girl of thirteen was even considered to have a pretty face. All were tatooed to a greater or less extent, chiefly on the brow, and on each side of the mouth and chin; this ornament consisting in lines alone, without any peculiar figures, and thus conforming to the usages of the north-western Esquimaux of America, as they have been described by different voyagers."

It has been mentioned that one of the natives was drawn about in a sledge, having lost a leg. Capt. Ross undertook to supply him with a wooden one.

"The promised leg, being now complete, was fitted on; and there was little time lost in finding its use and value; as the disabled person soon began to strut about the cabin, in apparent ecstacy; with more reason certainly to be delighted with his present, than all the others united, with what they had received. All the surgery in this case lay indeed with the carpenter; not the worst operator, I believe, in this compound profession; but I doubt if any effort of surgery ever gave more satisfaction than we had thus conferred, in reproducing a man fully serviceable once more to himself and his community."

Other extraordinary cures were effected both by the Captain and the natives.

"We had here found the native who had been ill of a sore throat some months before; and the phial of medicine he had received was hanging from his neck, surrounded by other ornaments. It did not seem to have been opened, and had probably been kept as a charm. In return for it, seeing that the surgeon was suffering from tooth-ache and a swelled face, he proceeded instantly to his own mode of cure, by tapping the cheek three times, and blowing as often in the patient's face. That the doctor shortly recovered, is certain; and if it was by means of the charm, it is not the first time that tooth-ache has been cured in the same manner."

On the 20th of January the sun appeared for the first time after an absence of fifty days. About this time it became evident that their new acquaintances were not so scrupulously honest as had been imagined. It is to be regretted, that the method of recovering the stolen property would not be universally successful:—

"A large reading-lens had disappeared for some days; and I had reason, on consideration, to suspect the conjurer Otookiu; the candle having gone out, for some time, in the cabin, after I had been exhibiting its effects to him. This was confirmed afterwards, by his unwillingness to admit me into his house at my last visit to the village. I therefore told him that the swelled face (of which he had applied to be cured) had been produced by the magical glass, and that it must be returned. His confession immediately followed, together with a promise to bring it back on the following day: without which, I assured him that his other cheek would swell in the same manner. It was brought back accordingly, together with a hammer which had disappeared; while the snuffers were admitted to be in the possession of one of the women, together with a glass out of my spectacles, which one of the children had found, on its having dropped out. The terror of the conjurer was indeed so great, that he brought back a hook and a harpoon head which I had given him in exchange for a bow: on which to preserve this probably useful impression of terror, I agreed to a re-exchange. * * *

"We bought some articles brought by the natives, but did not suffer them to come on board. But this was not the only purpose of their visit; since there was a general restoration, as we understood, of all other things which they had purloined; among which a table knife from the mate's mess had alone been missed. With this there was a piece of iron, another of an iron hoop, and a sheave of a block. The cause of this repentance and restoration was, we found, to be attributed to the guns which had been fired for the purpose of the experiments on sound. One of them having attended Commander Ross to the observatory, and having asked what the 'guns said,' was informed that they were naming the thieves who had taken our property, of whatever nature, from the ship; on which there was a general convocation held at the village, and it was agreed to return everything."

We have now several narratives furnished by Commander Ross of his various expeditions in search of islands, inlets, and generally, it may be said, a North-west Passage; but he was destined to reach the Western Sea by land, and not by water. These expeditions were not gone through without personal risk and great bodily fatigue, and some account of the last and most successful, inasmuch as on this occasion, he reached within 200 miles of Cape Turnagain, cannot fail to be interesting. Here is his account of their arrival at the Western Sea:—

"The party which I had quitted for a short time, announced their arrival on the shores of the Western Sea by three cheers; it was to me, as well as to them, and still more indeed to the leader than to his followers, a moment of interest well deserving the usual 'hail' of a seaman; for it was the ocean that we had pursued, the object of our hopes and exertions; the free space which, as we once had hoped, was to have carried us round the American continent, which ought to have given us the triumph for which we and all our predecessors had laboured so long and so hard. It would have done all this, had not nature forbidden it might have done all this had our chain of lakes been an inlet, had this valley formed a free communication between the eastern and western seas; but we had at least ascertained the impossibility; the desired sea was at our feet, we were soon to be travelling along its surface; and, in our final disappointment, we had at least the consolation of having removed all doubts and quenched all anxiety, of feeling that where God had said No, it was for man to submit, and to be thankful for what had been granted. It was a solemn moment, never to be forgotten: and never was the cheering of a seaman so impressive, breaking as it did on the stillness of the night, amid this dreary waste of ice and snow, where there was not an object to remind us of life, and not a sound seemed ever to have been heard."

We shall now conclude our present notice with a pretty full abstract of this last most important expedition:—

"Cape Isabella rises abruptly, and often precipitously, to about five hundred feet above the level of the sea, and is formed of grey granite, presenting patches of vegetation, which, for this climate, seemed to have been unusually luxuriant in the past summer. The track of grouse, hares, and foxes, were the only indications of animal life that were seen.

"From the accounts of the Esquimaux, I had expected to see a narrow entrance to this inlet, beyond the cape, to which they had given the name of Ik-ke-rush-yuk; as they had also described it to be formed by a low point to the westward, and some islands. But instead of this, the land on which I stood, still preserved its westerly trending, while the opposite to my present place, where several small islands skirted the northern part of it to the southwest. Under these circumstances, I considered that my best plan was to continue along this coast as far as the entrance of the inlet; the boundary of which would be determined by the hummocky ice of the ocean. The needful observations for this cape were then made; but, in returning to the party, I had the misfortune to break my only compass by a fall; an accident which prevented me from making any farther observations on the variation of the needle, and thus causes a blank which I must regret, pervading the remainder of this journey.

"Our labour hitherto had exceeded our strength; and it was therefore regulated thenceforward, that we should rise at four in the afternoon; and, after our meal, with the necessary stowage and arrangements, proceed on our daily, or rather nightly, journey between six and seven: limiting the length of it to ten hours. The labour of encamping, the evening (being truly a morning) meal, repairs of clothes, and other matters, then occupied three or four hours, so that the seven or eight remaining were left for sleep.

"Under this new arrangement we set out at six in the evening. * * * The direction of the coast, for about ten miles, is west-north-west, after which it becomes more northerly: and it became necessary to examine the whole of the bays and inlets thus formed, because I understood from the natives that the entrance of the expected inlet was narrow. They, however, proved shallow: and being light in comparison with the loaded party, I was enabled to search the whole accurately, while the rest skirted the coast between the several points.

"After a fatiguing day's journey of twenty miles, we halted soon after four in the morning; and, in this as in the preceding, we passed several canoes covered with stones, and some *cachées* of provisions belonging to the Esquimaux which, of course, we took care not to disturb. The occasional discovery of sea-weed, shrimps, and shell-fish, also served to confirm us in the belief that we were really on the shores of the ocean, and not of any fresh water lake, supposing that there could have been, here, one of such magnitude as to occupy the great flat space of ice before us. This, indeed, had been at one time imagined by some of the party, in consequence of the want of a tide mark on the shore, and of there being no hummocky ice in the offing. * * * *

"We continued our journey; and after travelling five or six miles to the north-north-east, reached the termination of the inlet, and there found the estuary of a river; the banks being contracted at the exit to a few hundred feet so as to produce a rapid; while, a little higher up, it was a quarter of a mile in breadth. The number of canoes that we found buried on the western bank, proved it to be a principal fishing station of the Esquimaux; as we might equally have judged from the numerous landmarks and *cachées*.

"The weather being very fine, I ascended a hill about a thousand feet high, whence I obtained an extensive view of a chain of lakes, leading to the north-east through a limestone country, while the granite hills took a north-north-westerly direction. * * *

"A fresh breeze made our burrow colder than was agreeable, though the thermometer was still above zero. The drift and haze which accompanied, prevented us also from starting till eight in the evening, when we continued our journey along the coast, which soon began to trend to the northward of west; and, shortly after, the cheering sight of the sea, covered with hummocks of ice, convinced me that we had at length arrived at the strait called Ik-ke-rush-yuk by the Esquimaux. Continuing to follow the coast, we found it turn quickly round to the northwest; while the heavy-washed sea-ice on our left removed all doubt of the course now to be pursued.

"I therefore resolved to reach the opposite coast, should this attempt prove to be practicable; and finding a favourable tract of smooth ice, we left that on which we were, before midnight. In proceeding, we came to a ridge of hummocky ice thirty feet high, running across our path, which we had great difficulty in surmounting; it being necessary to carry the luggage over it, and to cut a passage for the sledge with axes. This occupied more than an hour; when, observing some islets to the southwest that had previously been concealed by this ridge, we steered for them, and after passing several lower ones, nearly on a level with the flat ice, were obliged by a supervening haze, to encamp on the east side of an extensive island, at five on the morning of the twenty-third; having travelled about sixteen miles. This, being the anniversary of our departure from England, was distinguished by a dinner of frozen roast beef, and, what was now rare with us, a glass of grog. * * * *

"We pursued our journey at the usual time, but found our way extremely laborious among this rough ice; while our toils were much increased by a thick fog, which froze on our clothes so as to render us nearly incapable of moving under their weight and stiffness. It was even with great difficulty, so much were the men exhausted, that we could form our encampment at six in the morning, when we halted.

"We were in a miserable plight, from the fatigues of this day, and passed a comfortless night. To resume our hard and frozen dresses, was also a most difficult and painful operation; but the evening proved fine, and a little courage and exertion soon put us in motion once more."

The next day the party made a journey of twenty miles. Setting forward again at eight, they found the land trending to the west-north-west. After crossing an extensive inlet, it trended more to the northward.

"I here began," says Commander Ross, "to doubt what our actual position might be, when I now considered all the indications of the coast that we had seen or passed. The question with me was, whether we were in reality skirting a continent, or whether all this irregular land might not be a chain of islands. Those unacquainted with frozen climates like the present, must recollect that when all is ice, and all one dazzling mass of white, when the surface of the sea itself is tossed up and fixed into rocks, while the land is, on the contrary, very often flat, if not level: when, in short, there is neither water nor land to be seen, or when both are equally undiscriminated, as well by shape as by colour, it is not always so easy a problem as it might seem on a superficial view, to determine a fact, which appears, in words, to be extremely simple.

"At any rate, I could satisfy myself, in our present position: and thence one disagreeable consequence, which, trifling as it may seem to a reader when compared to an essential geographical fact, was of no small moment to us, and indeed to the progress and success of the expedition itself. Had we been sure that we were on the continent, we might have left in concealment a large portion of our provision, and this would have enabled us to proceed with much more ease and rapidity. But in case that it proved but a chain of islands, these would have been left behind, to our unspeakable inconvenience, or rather perhaps to our destruction, in case I should do what was really essential, in returning by the continental shore; while, if not daring to attempt this for such a reason, a principal object of our journey would have been abandoned. I was therefore at length determined to take the safest resolution; and thus consent to be still encumbered with the heavy load that so much augmented our labours, and so disadvantageously contracted our time.

"And, indeed, diminished as the weight was by the consumption which our provisions had already undergone, that load was not only still a heavy one, but was relatively to our strength, even more troublesome than it had hitherto been. The dogs had become worse than useless, from the continued labour which they had exerted, and which we could not diminish by giving them an occasional rest for a day or two, since we could not afford to hazard the loss of that fine weather, of which the term was fast approaching. Lest readers may have forgotten it, I ought perhaps to say that the height of summer in these climates renders travelling as impracticable as does the depth of winter. It is not that the heat is more intolerable than the cold, though it is sufficiently tormenting and hurtful, but that the frozen surface becomes at first so loose and wet as to be nearly impassable; while, as the ground is laid bare on shore, and the water opens at sea, it becomes utterly impossible to travel either by land or water, or rather, as I might safely say, by that which is both or neither. Latterly, indeed, we had but two of these animals in a serviceable state, and one of the poor creatures died at our present encampment.

"I here contrived to shoot two partridges, which not only gave us what was now rare, a warm meal, but enabled us to save our provisions; a most important matter, as we were now situated. No one will be surprised to hear how often during all these years we had formed the idle wish that men could live without food; a wish, idle and nonsensical as we felt it, that was ever intruding, since the necessity of eating was the ever-recurring obstacle to all our endeavours.

* * * "The weather being fine, we could distinguish the coast, still trending to the north-west; and thence, as for other reasons, I was desirous to continue our journey for another day or two, in hopes that the sea-line would shortly take the direction of Point Turnagain, which, could we have attained it, would have been an object of first-rate importance; since we might thus have also completed this line of coast, and, here at least, have left nothing remaining for future investigators. Will it be believed that I was not anxious to complete the survey of the north coast of America, that with so important an object almost within my very reach, I was not desirous to attain this great triumph?

"But my men were no less so; and it would be doing them great injustice, did I not here record their spirit and ambition. For such an attempt, it was necessary to make a still further reduction in the allowance of provisions; and whatever they who are well fed and at ease may think, such sacrifices are not small to him who is already under-fed and hard-worked, who must exert himself every hour beyond his strength, who feels that food would enable him to go through his task, and who, independently of this reasoning, is actually suffering under the instinctive and irrepressible cravings of animal nature. Yet on mentioning my wishes to the mate Abernethy, he informed me that the men had intended themselves to make the same proposal to me, and were only waiting for the proper opportunity of transmitting their wishes through him. It may be believed that I rejoiced in this generous feeling on their parts; and the necessary reduction was therefore immediately announced.

"Under this alteration, which enabled us to advance for two days longer, we set out at eight in the evening, and, after passing over some small lakes, reached the sea at eleven. We then continued our course along the coast, in a north-westerly direction till midnight, much annoyed by thick fogs for a time, but finally reaching a point at two o'clock on the twenty-eighth of May, which formed one side of an extensive bay. This was named after Dr. Richardson; and as it was a convenient spot for a depot, since by it we should be obliged to return, we resolved here to disburden ourselves of part of our incumbrances.

"We therefore left behind everything which we could spare, and taking four days' provision in the sledges, set out at three in the morning, crossing Richardson's bay, and encamping at six. Departing again at six in the evening, we found the land to trend towards the north-west till midnight, when we reached a point that was then named Cape Felix, after the founder of our expedition; at the back of which was an accumulation of hummocky ice. This point is the south-west cape of the gulf of Boothia, named after the same singularly generous and spirited individual, whose fame and deeds will go down to posterity among the first of those whose characters and conduct have conferred honour on the very name of a British merchant.

"Here we found the land trend to the south-west, while the vast extent of ocean then before our eyes, assured us that we had at length reached the northern point of that portion of the continent which I had already ascertained with so much satisfaction to be trending towards Cape Turnagain. * * *

"Continuing hence to the south-westward, till about two in the morning, we arrived at the north point of a bay, across which we passed, over much hummocky ice, gaining its southern point after two hours of hard labour. Hence the coast continued to trend about south-west by south, till we halted about six o'clock, after a journey of twenty miles, though with much fatigue to the whole party. The latitude here was 69° 46′ 19″, and the longitude 98° 32′ 49″.

"The reflection that we had now rounded the northernmost point of this part of the continent, and that we had found the coast trending in the desired direction, could not fail to give us the greatest satisfaction. The great extent of sea also which was now seen from Cape Felix, free from all appearance of land, served to raise our expectations as to the further success of the ensuing season, when we might hope, now that we knew what was before us, to succeed entirely in completing the survey of the north shore of America, since we could now make our arrangements accurately to meet what was still to be done and endured.

"Additionally desirous, therefore, to be quite sure of the facts as far as they could here be ascertained, and that I was not deceived by some large indentation of the coast, I devoted the day to a still more accurate examination of the circumstances. How extremely unwilling I was to return at all, from this point, with the main object of the expedition almost, it may be said, within our reach, may well be imagined, but others must be in the same situation before they can conceive the intensity of this regret and the severity of this disappointment. Our distance from Cape Turnagain was not greater than the space which we had already travelled: as many more spare days at our command would have enabled us to do all that was remaining, to return triumphant to the Victory, and to carry to England a truly worthy fruit of our long and hard labours.

"But these days were not in our power; for it was not days of time, but of the very means of existence that were wanting to us. We had brought twenty-one days' provision from the ship; and much more than the half was already consumed, notwithstanding the reductions which had been made, without which we should have even stopped far short of our present point; to reach which had occupied thirteen days, when we had provided ourselves for no more than eleven outwards. There was nothing therefore left to us but to submit: and thus, however mortified at the necessity of such a resolution, I was compelled to settle finally for our return to the ship, after we had advanced one other day. By the shortest route back, our distance from her was computed at two hundred miles; and, even on a very scanty allowance, we could not reckon on provisions for more than ten days.

"As some of the party were now suffering in their feet, I took this opportunity of giving them a day's rest, and left our station, with Abernethy, at eight in the evening. Being light, we now travelled quickly along the land, to the south-westward, till midnight, when, from a stranded mass of ice about forty feet high, we saw a point of land bearing southwest about fifteen miles distant, and could only trace its continuity with that on which we stood; the line forming an extensive bay occupied by very heavy packed ice. A little examination, however, led us to doubt whether the remote point might not be an island, as there was an intermediate one about eight miles off. But to make an actual examination was now impossible; since our time was nearly expended, and the ruggedness of the ice between these points would have demanded a very tedious and laborious journey.

"We now therefore unfurled our flag for the usual ceremony, and took possession of what we saw as far as the distant point, while that on which we stood was named Victory Point; being the 'ne plus ultra' of our labour, as it afterwards proved, while it will remain a standing record of the exertions of that ship's crew.

"On Victory Point we erected a cairn of stones six feet high, and we enclosed in it a canister containing a brief account of the proceedings of the expedition since its departure from England. Such has been the custom, and to that it was our business to conform; though I must say, that we did not entertain the most remote hope that our little history would ever meet an European's eye, even had it escaped the accident of falling into the hands of the Esquimaux. Yet we should have gone about our work with something like hope, if not confidence, had we then known that we were reputed as lost men, if even still alive, and that our ancient and tried friend Back was about to seek for us, and to restore us once more to society and home. And if it is not impossible that the course of his present investigation from Cape Turnagain eastward may lead him to this very spot, that he may find the record and proof of our own 'turnagain,' we have known what it is for the wanderer in these solitudes to alight upon such traces of friends and of home, and can almost envy him the imagined happiness; while we shall rejoice to hear that he has done that in which we failed, and perhaps not less than if we had ourselves succeeded in completing this long pursued and perilous work.

"It was at one in the morning of the 30th of May, that we turned our backs on this last and furthest point of our journey."

DRUIDICAL TEMPLE, NEAR KESWICH, IN CUMBERLAND.

Time-honour'd pile! by simple builders rear'd,
Mysterious round, through distant times rever'd,
Ordain'd with earth's revolving orb to last,
Thou bring'st to mind the present and the past.

Dr. Ogilvie's *Fame of the Druids.*

The Druidical Circle represented in the accompanying plate, is to be found on the summit of a bold and commanding eminence called Castle-Rigg, about a mile and a half on the old road, leading from Keswick, over the hills to Penrith,—a situation so wild, vast, and beautiful, that one cannot, perhaps, find better terms to convey an idea of it than by adopting the language of a celebrated female writer, (Mrs. Radcliffe,) who travelling over the same ground years ago, thus described the scene. "Whether our judgement," she says, "was influenced by the authority of a Druid's choice, or that the place itself commanded the opinion, we thought this situation the most severely grand of any hitherto passed. There is, perhaps, not a single object in the scene that interrupts the solemn tone of feeling impressed by its general character of profound solitude, greatness, and awful wildness. Castle-Rigg is the centre point of three valleys that dart immediately under it from the eye, and whose mountains form part of an amphitheatre, which is completed by those of Borrowdale on the west, and by the precipices of Skiddaw and Saddleback, close on the north. The hue which pervades all these mountains is that of dark heath or rock, they are thrown into every form and direction that fancy would suggest, and are at that distance which allows all their grandeur to prevail. Such seclusion and sublimity were indeed well suited to the dark and wild mysteries of the Druids."

These temples of the Druids, though all in a circular form, (supposed to have been emblematick of the Deity,) present three varieties, which Dr. Stukeley classed as follows. The round temples, simply, he called temples, and such he considered to be the one at Rollrich, in Oxfordshire, and which also resembles this. Those with the form of a snake annexed, as that of Abury, in Wiltshire, he called serpentine temples, or *Dracontia*, by which they were denominated of old; and those with the form of wings annexed (as he supposed Stone-Henge to have been;) those he called *Alæ*, or winged temples.

The one here represented is of the first, or simple class, and consists, at present, of about forty stones of different sizes, all, or most of them, of dark granite,—the highest about seven feet, several about four, and others considerably less; the few fir-trees in the centre are, of course, of very modern growth. The form may, with more propriety, be called an oval, being thirty-five yards in one direction, and thirty-three yards in another, in which respect, it assimilates exactly to that of Rollrich; but what distinguishes this from all other druidical remains of a similar nature, is the rectangular enclosure on the eastward side of the circle, including a space of about eight feet by four. The object of this is a matter of conjecture;—by some it is supposed to have been a sort of Holy of Holies where the Druids met, separated from the vulgar, to perform their rites, their divinations, or sit in council to determine controversies; others consider it to have been for the purposes of burial, probably it might have been intended for both.

That the Druids also performed their worship in the seclusion of groves is a fact generally stated in history. The Isle of Anglesey, formerly covered with wood, was a celebrated sanctuary for them; and it is more than probable that these circular stone temples, in the midst of elevated moors or plains, were places at which the people from the surrounding districts were at stated times assembled either for the purposes of justice, or for determining upon affairs affecting the welfare of the community, and which meetings were also accompanied with the performance of religious ceremonies.

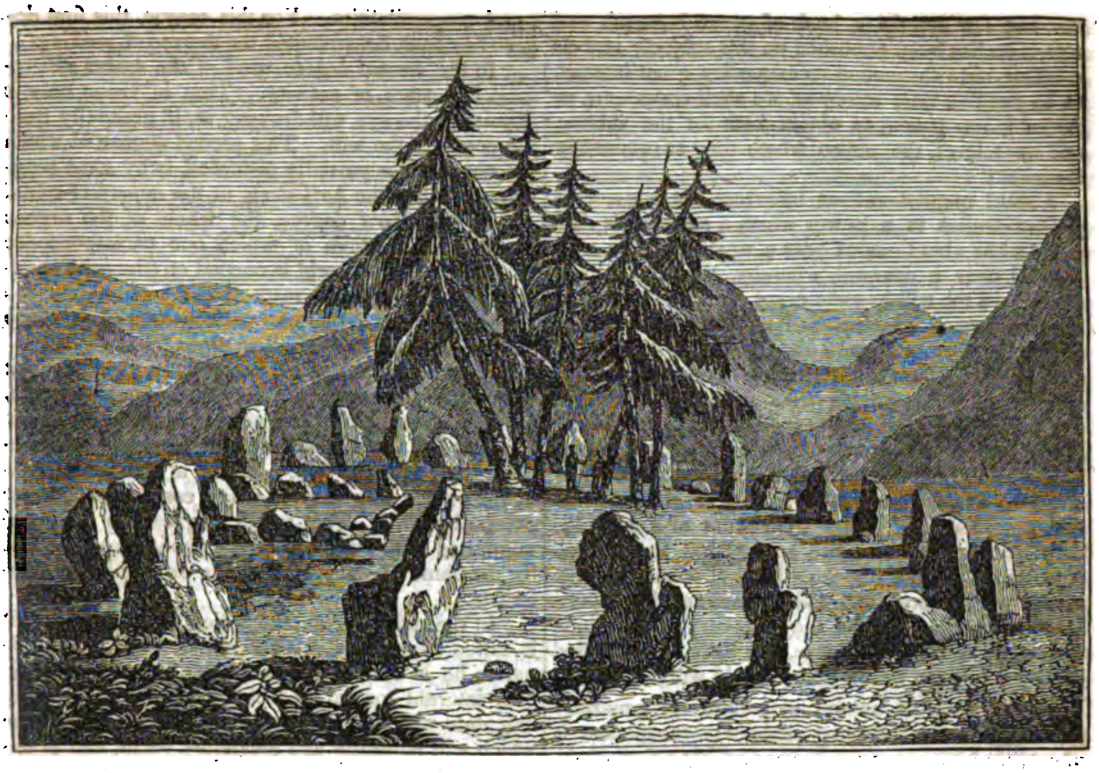
That the earliest temples and altars were formed of stones, rough and unhewn, is we believe admitted by all writers. Numerous passages may be quoted from the Old Testament in allusion to it, but one amongst the rest may be noticed more particularly; viz. Exodus xxiv. 4: "And Moses rose early in the morning, and builded an altar under the hill, and twelve pillars according to the twelve tribes of Israel." It appears also, that in patriarchal times, they planted groves as temples for worship, and in hot countries this was done, as well for convenience in summer season as also for magnificence. Abraham we read "dwelt long at Beersheba, where he planted a grove, and called upon the name of the Lord," and in these groves were also erected temples of stone.

The patriarchal mode of worship passed over all the western world, and is supposed to have been introduced into this country by the neighbouring Celtæ or Gauls, or by the Phœnicians, who traded hither for tin. However this may be, when the Romans invaded Britain, they found the Druids presiding over and conducting the worship of the country; acting also as judges and arbiters in all differences and disputes, both publick and private. It is from Cæsar, and other Roman writers, that most of the information we have respecting them is derived, for they had no written rules or regulations either as to their religion, their science, or their laws. The accounts therefore furnished by these historians of the religion and customs of the Druids, written principally from mere report, and under an hostile impression towards them, are not altogether to be relied upon; indeed, the barbarities ascribed to them, in the ceremonial of their religion, are so much at variance with their high and acknowledged character in learning and general science, that one cannot but imagine them to be highly exaggerated, if not altogether fabulous.

The best authorities on the subject of the Druids seem to agree in the following description of them. They were the first and most distinguished order amongst both the Gauls and Britons; they were chosen from the best families, and the honours of their birth, joined with those of their function, procured them the highest veneration amongst the people. They were versed in astrology, geometry, natural philosophy, politicks, and geography; they were the interpreters of religion, and the judges of all affairs indifferently; they were the instructers of the youth, and taught by memory, as they never allowed their instructions to be written.

Their garments were remarkably long, and when employed in religious ceremonies they always wore a white surplice. They generally carried a wand in their hand, and wore a kind of ornament enchased in gold about their necks, called the Druid's egg; they are also represented with a hatchet in their girdle, used for the cutting of the mistleto.

They believed in the immortality of the soul, and worshipped one Supreme Being. They attached a degree of sanctity to the oak, and wore chaplets of it in their religious ceremonies. They were deeply versed in astronomy, and computed their time by nights and not by days, and all their great solemnities, both sacred and civil, were regulated by the age and aspect of the Moon. Their most august ceremony of cutting the mistleto from the oak was always performed on the sixth day of the Moon. In medicine also, they were great proficients, and possessed, in fact, great store of knowledge in all sciences; so much so, that Pliny speaks of them as practising magick, and being so great proficients



DRUIDICAL REMAINS, NEAR KESWICK, IN CUMBERLAND

therein, as to equal the Persian and Chaldæan Magi, so that one would even think, he says, that the Druids had taught it them.

The number three was said to be a favourite number with them, and that part of their religious worship consisted in a solemn adoration, or three silent bowings.

The Romans on their invasion, endeavoured to exterminate the Druids, but it does not appear that they induced the natives to adopt their own system of polytheism. The seeds of their ancient religion still continued implanted in their minds, and opened a ready access to the doctrines of Christianity, which are said to have made more progress in Britain and Gaul (from the time of the first preaching of the Gospel) than in any other country.

Of this old patriarchal religion, the only remains, in substance, to be found at present, are the stone temples, of which few, if any, are in so perfect a state as the one here represented. The groves have long since fallen beneath the axe, and most of the stone temples have been spoiled for the value of the materials in making fences or roads, or mending habitations; the mallet of the geologist now comes in to aid the destruction, so that in a few years more, this temple, like the rest, may disappear.

Of the forms and ceremonies of the religion no traces are to be found, except in the representation of scenes of magick, in which we invariably see the magick circle,—the witch in a robe, with a wand in her hand, and various other allusions to druidical ceremonies. Who can think of the subject without calling to mind the scene in ***Macbeth***, where Hecate, by way of preparation for the incantation, says to the Witches—

> "I'm for the air . . . .
> Upon the *corner* of the *moon*
> There hangs a vaporous drop profound
> I'll catch it, ere it come to ground;
> And that, distill'd by magick slights,
> Shall raise such artificial sprights,
> As, by the strength of their illusion,
> Shall draw him on to his confusion."

Part of the ingredients of the caldron were

> . . . . . "Slips of yew
> Slivered in the *moon's* eclipse."

and there are other passages alluding to their ceremonials.

"Time rolls his ceaseless course," bearing on his wings the lessons of Divine Truth to the different regions of the earth. How many forms of religion have already been cast into the shade by them? And the period will doubtless arrive when the Temple of Jagganatha, now an object of veneration to millions, will, with his ceremonies, become the subject of some legendary tale, or like the Druids' temple, a mere theme for the antiquary.

ANIMAL MAGNETISM.

> "Now see the various wonders as they pass,
> The Cowpox, *Tractors*, Galvanism, Gas."—*Byron*.

It happens that Byron has here sneered at four scientifick discoveries in their first blush, which afterwards have been established (at least three of them) as among the most valuable that ever were developed for the service of mankind. In the word "tractors" he refers to what is called animal magnetism, a scientifick wonder which, though practised on the continent for upwards of fifty years, and hinted at by many medical writers during the last three centuries, is almost entirely unknown in this country. Within the last few months, a book of great research and reflection has been published on this subject; and as it seems, notwithstanding its exceeding great interest, to be exciting little attention, we shall endeavour, as far as in our power, to obtain, both for the volume, and its subject, the notice which they so eminently deserve.

Animal magnetism—an incorrect but convenient phrase—refers to a power which a stronger is supposed to be able to exert over a weaker person, or a healthy over a diseased, whereby, through a mere exertion of the will in some cases, but more generally by this means accompanied by stroking with the hands, the former throws the latter into a state of sleep, during which there are experienced certain peculiar sensations, arising from nervous excitement, and which may have the best effects upon the health of the patient. The operations and results of animal magnetism altogether resemble what we conceive of magick; and they are still a subject of general doubt and suspicion, but rather from want of knowledge than from any other cause, seeing that the French Academy, the most respected body of scientifick men in the world, have satisfied themselves, by experiments, that, startling as the discovery is, it is quite true and free from imposture, and have here testified that such is their belief to the whole world.

The process of animal magnetism is generally performed in the following manner:—the patient is placed in a sitting posture, in a convenient elbow-chair, or on a couch—sometimes even in a common chair. The magnetizer seated on a chair a little more elevated and at the distance of about a foot from the patient, collects himself for some moments, during which he takes the thumbs of the patient between his two fingers, so that the interior parts of the thumbs are in contact with each other. He fixes his eyes upon the patient, and remains in this position till he feels that an equal degree of heat is established between the thumbs of both parties. He then withdraws his hands, turning them outward, places them on the shoulders, where he allows them to remain about a minute, and then conducts them slowly, with a very slight friction, along the arms to the extremity of the fingers. This operation he performs five or six times, which the magnetizers call a *pass;* he then places his hands above the head, holds them there a moment, draws them downwards in front of the face at the distance of one or two inches to the pit of the stomach, resting his fingers upon this part of the body; and lastly, descends slowly along the body to the feet. These *passes* are repeated during the greater part of the sitting; and when he wishes to terminate it, he prolongs them beyond the extremity of the hands and feet, shaking his fingers each time. Finally, he makes transverse passes before the face and breast, at the distance of three or four inches, presenting his hands approximated to each other, and separating them abruptly.

There are variations upon this process, but it is unnecessary to notice them here. The result, where there is no obstacle or deranging cause, is that the patient falls involuntarily into a kind of trance, the progressive sensations of which are thus classified by a German philosopher, named Kluge:—

"The *first* degree presents no remarkable phenomena. The intellect and the senses still retain their usual susceptibilities. For this reason, this first degree has been denominated the degree of *waking*

"In the *second* degree, most of the senses still remain in a state of activity. That of vision only is impaired; the eye withdrawing itself gradually from the power of the will. This second degree, in which the sensibility is partially disturbed, is by some magnetizers called the *half-sleep*, or the *imperfect crisis.*

"In the *third* degree, the whole of the organs through the medium of which our correspondence with the external world is carried on (the senses) refuse to perform their respective functions, and the patient is placed in that unconscious state of existence which is called the *magnetick sleep.*

"In the *fourth* degree, the patient awakes, as it were within himself, and his consciousness returns. He is in a state which can neither be properly called sleeping nor waking, but which appears to be something between the two. When in this state, he is again placed in a very peculiar connexion with the external world. This fourth degree has been distinguished in the writings of the animal magnetizers, by the name of the *perfect crisis*, or *simple somnambulism.*

"In the *fifth* degree, the patient is placed in what is called the state of *self-intuition;* when in this situation he is said to obtain a clear knowledge of his own internal mental and bodily state, is enabled to calculate with accuracy, the phenomena of disease which will naturally and inevitably occur, and to determine what are their most appropriate and effectual remedies. He is also said to possess the same power of internal inspection with regard to other persons who have been placed in magnetick connexion with him. From this fifth degree all the subsequent magnetick states are comprehended under the denomination of *lucidity*, or *lucid vision* (Fr. Clairvoyance; Germ. Hellsehen.)

"In the *sixth* degree, the *lucid vision*, which the patient possessed in the former degree, extends to all objects, near and at a distance, in space and time: hence it has been called the degree of *universal lucidity.*"

The source of the phenomenon is by some supposed to be in a circulating fluid, analogous to the blood, but imperceptible, and residing in the nerves, and which has a power of expanding beyond the sphere of the body, and affecting near or distant objects. This fluid, if it be the seat of the magnetick power, is probably obedient to the volition or will, for persons more than usually susceptible of the magnetick influence have been operated upon involuntarily and unexpectedly to themselves, by a magnetizer who took his position in another room, and only exerted an energetick and intense desire to produce the effect. This is no doubt mysterious, and very like superstition; but is there any better explanation at the present day for *mineral* magnetism—for the cause and nature of disease—for the simple phenomenon of mortal life? Animal magnetism, in fact, appears to us as not more unintelligible than any of these things, and it would certainly have been long ago received, like them, into the sphere of acknowledged truths, if it had not been so very wonderful as to excite suspicion even where the senses were satisfied of its existence.

It is obvious from the experiments reported by the French Academy, that there is an intimate connexion between ordinary somnambulism or sleep-walking, and the intuitive power, independent of the senses, which is developed during the fits produced by the magnetick influence. Sleep-walkers perform amazing feats, and execute the most intricate and delicate operations, without the natural sight which would be necessary in a waking person, even to attempt such hazardous and difficult processes. Some persons, on the other hand, who have been artificially thrown into this state, or something like it, by magnetism, have shown themselves to possess senses and powers of action distinct from those which we use in our waking moments. The French Academy report upon four individuals who exerted greater strength and agility while magnetized than in their usual state; upon two who, with their eyes closed, distinguished and described objects placed before them; upon other two who foresaw, several months previously, the day, the hour, and the minute of the access and return of epileptick fits, and one who announced the period of his cure; and upon one, who, when thrown into magnetick somnambulism, and placed in contact with an individual in unsound health, pronounced in three several instances, the exact internal state of these persons, one of which descriptions was confessed by the gentleman so inspected to be correct so far as he knew, and another was found equally so, upon dissection after death.

Perception without the use of the senses is well known to have frequently taken place in diseased persons; and it is a familiar fact, that where one sense is extinguished, another sometimes takes up its operations, and, at least in part, supplies its place. Instances of persons who could see with the stomach are frequent, and perfectly well authenticated. The physician Van Helmont, by tasting a particular poisonous root, ceased for several hours to hear, think, know, or imagine any thing by means of his head or brain, and found that all the functions of that organ were transferred to the pit of the stomach, where it is supposed, the capital of the nervous system is situated. M. Petetin, an eminent physician at Lyons, had a cataleptic patient—a lady—who seemed for a long time to be in a state of complete torpor and insensibility. He discovered, however, by accident, that she heard him perfectly when he spoke upon her stomach. Having satisfied himself of this fact by repeated trials, he afterwards perceived that the case was the same in regard to the senses of sight and smell. His patient read with the stomach, even through an intervening dark body. At last he found that it was not necessary for him to speak immediately upon the stomach; but it was quite sufficient to speak at the extremity of a conductor, of which the other extremity rested upon that part of the patient's body. Petetin published an account of these facts above forty years ago. He subsequently found other cataleptick patients, who exhibited precisely the same phenomena, with this difference, that, in some cases, the faculties were found to be transferred, not only to the epigastrium, or pit of the stomach, but also to the extremities of the fingers and toes. In others, where these phenomena took place, there was a prodigious development of the intellectual powers, and a foresight of their future diseased symptoms. An account of some of his experiments is thus given from his posthumous volume by Mr. Colquhoun:—

"M. Petetin secretly placed pieces of cake, biscuit, tarts, &c. upon the stomach of one of these patients, which was immediately followed by the taste of the particular article in the mouth. When the substance was enveloped in silk stuff, no sensation was felt by the patient; but the taste was immediately perceived on removing the covering. An egg was covered over with varnish, and the patient felt no taste until the varnish was removed. One of the patients distinguished a letter addressed to her, which was folded four times, enclosed in a semi-transparent box, and held in M. Petetin's hand upon her stomach.

"A letter was placed upon the fingers of one of the patients, who immediately said, 'If I were not discreet, I could tell you the contents; but to prove that I have read it, there are just two lines and a half.' The same patient enumerated exactly the most remarkable articles which were in the pockets of a whole company.

"These phenomena are sufficiently wonderful; but the following experiment afforded still more surprising results. Another patient, Madame de St. Paul, was in a state of as perfect somnambulism as the preceding, only that, during the crisis, she was incapable of speaking. She carried on a conversation, however, by means of signs, with the Chevalier Dolomieu, brother to the celebrated naturalist, who interrogated her mentally. 'After placing the chain,' says M. Petetin, 'upon the *epigastrium* of the patient, I gave the ring to M. Dolomieu. No sooner had this gentleman touched his lips, than the features of Madame de St. Paul expressed attention. Every question addressed to her mentally gave a new expression to her countenance, and produced a great change upon that of the interrogator. She ended by smiling, and making two approving signs with her head. M. Dolomieu declared that this lady had answered categorically to his thoughts.'

"M. Dolomieu then requested the patient to answer, by affirmative or negative signs, to the questions which he was about to put to her aloud. He succeeded in making her express that what he had in his pocket was a silver seal with three sides, and the name of the animal engraved on his arms.

"Finally, it was found, in the course of these experiments, that if several persons form a chain, the last having his hand upon the stomach of the patient, and the first, who is at the greatest distance, speak in the hollow of his hand, the patient will hear perfectly well, but will cease to hear even the loudest voice, if the communication between the chain be interrupted by a stick of sealing-wax."

Such facts as these—for that they are facts is not to be disputed—testify that there are powers and susceptibilities in our frames with which we are yet imperfectly acquainted, but which may be developed hereafter to such a degree as to be eminently serviceable to mankind. That there is a connexion between the magnetick phenomena and those described immediately above, seems beyond a doubt; and that electricity enters into the latter, is evident from the fact of a non-conducting substance deranging the effect. Little else is yet known on this curious subject; but when more facts shall have been amassed, it will both be more easily reduced to a system, and more generally and readily believed. Animal magnetism will yet, in all probability, explain many things which we now look upon as the superstitions of a former and less enlightened age—the magical powers of remote antiquity, the oracular system of Greece, the *evil eye* among the Mussulmans, the false miracles of early opponents of Christianity, the *glamour* of the modern gypsies, witchcraft, the royal touching for scrofula, and second-sight. Let no one be unduly skeptical on this subject: the most philosophical minds in Europe have acknowledged that it is, to the extent above described, free from imposture: and if such have so pronounced *from* observation and experiment, it would be hard, indeed, if common minds, *without* those means of judgement, were to be allowed to deny the theory, merely because it does not tally with the preconceived ideas of their imperfect understanding.

From what source the above very singular statements are derived, we are not prepared to inform. We should indeed have been very much disposed to have been incredulous upon the subject, had we not accidentally fell upon the following page in Macknish's Philosophy of Sleep, which has rather inclined us to believe that these statements are founded in truth. Still as the subject is but little understood, we have not yet sufficient confidence in the matter to hazard a conclusive opinion either on one side or the other. Hear Macknish.—*Ed. Fam. Mag.*

"According to the report made by a committee of the Royal Academy of Sciences in Paris, animal magnetism appears to have the power of inducing a peculiar species of somnambulism. The circumstances seem so curious, that, even authenticated as they are by men of undoubted integrity and talent, it is extremely difficult to place reliance upon them. The person who is thrown into the magnetick sleep is said to acquire a new consciousness, and entirely to forget all the events of his ordinary life. When this sleep is dissolved, he gets into his usual state of feeling and recollection, but forgets every thing that happened during the sleep; being again magnetized, however, the remembrance of all that occurred in the previous sleep is brought back to his mind. In one of the cases above related, the patient, a lady of sixty-four years, had an ulcerated cancer in the right breast. She had been magnetized for the purpose of dissolving the tumour, but no other effect was produced than that of throwing her into a species of somnambulick sleep, in which sensibility was annihilated, while her ideas retained all their clearness. In this state, her surgeon, Mr. Chapelain, disposed her to submit to an operation, the idea of which she rejected with horrour *when awake*. Having formally given her consent, she undressed herself, sat down upon a chair, and the diseased glands were carefully and deliberately dissected out, the patient conversing all the time and being perfectly insensible of pain. On awaking, she had no consciousness whatever of having been operated upon; but being informed of the circumstance, and seeing her children around her, she experienced the most lively emotion, which the magnetizer instantly checked by again setting her asleep. These facts appear startling and incredible. I can give no opinion upon the subject from any thing I have seen myself; but the testimony of such men as Cloquet, Georget, and Itard, is not to be received lightly on any physiological point; and they all concur in bearing witness to such facts as the above. In the present state of knowledge and opinion, with regard to animal magnetism, and the sleep occasioned by it, I shall say no more at present, but refer the reader to the ample details contained in the Parisian report; an able translation of which into English has been made by Mr. Colquhoun."—*See Philosophy of Sleep, p.* 158.

PHYSICAL GEOGRAPHY.

Of the simple substances which compose the solid part of the globe. 2. *Metals.*

The only minerals which remain for us to consider are metals; substances whose brightness, weight, density, ductility, and fusibility, engage the attention of mineralogists and crystallographers; substances which, forming sometimes the representative signs of the products of industry, and sometimes the useful or the formidable instruments of our arts, and our passions ought to be carefully noticed in the description of political states; but they peculiarly deserve attention in the details of physical geography, from the intimate relation which they bear to two great agents of nature, electricity and magnetism. All philosophers should agree in considering the bearings and position of metals, as a subject worthy our most careful and persevering researches. Physical geography indispensably requires that a subject of this nature should constitute one of its departments; and if we devote to it a certain portion of our pages, our readers will perceive the advantages which are thus afforded us, even in the study of political geography. The following general results have been established with regard to the distribution of metals. 1. They decrease in variety and quantity, from the primitive to the alluvial period. 2. Molybdena, titanium, tin, tungsten, cerium, tantalum, uranium, chrome and bismuth, are of the oldest primitive formation; only faint traces of them in more recent rocks. 3. Arsenick, cobalt, nickel, silver and copper, occur in the oldest primitive, and also in the newer formations. 4. Gold, tellurium, antimony, and manganese, are of a middle age, occurring in the newer primitive, the transition, and the oldest secondary rocks. 5. Lead, zinc and mercury, are of later date, most abundant in the secondary formations. 6. Iron is universally distributed from the oldest granite to the newest alluvium. 7. The more crystalline ores abound in the primitive, and are continually decreasing in the newer formations. We shall class metals according to their specifick gravity.

Platina was unknown or neglected, until 1735, when it was discovered in Peru by Don Ulloa, a Spanish geometrician. It is now found in considerable abundance in various parts of South America, in Mexico, in Spain, and in Russia. It is brought to us in little grains, mixed with gold dust, ferruginous sand, and some particles of mercury. It usually contains fine extraneous minerals, namely, Palladium, Rhodium, Iridium, and Osmium. It is the least fusible of all the metals. The strongest heat of our furnaces cannot melt it; it is consequently manufactured only by beating and welding. There are but one or two establishments in the world where it is manufactured from the natural state, and those we believe are in France. Nearly all that we use in this country is first obtained in South America and carried to France, where it is manufactured into bars or sheets, from whence it is brought to our market, and here it now sells for about $7.50 per ounce. It is used for crucibles, and in the nicest mathematical instruments where it is necessary to guard against dilatation or contraction from the variations of temperature, but chiefly by dentists. In Russia it is used in the coinage.

Gold is found only in its native state, that is to say, almost pure. It exists in all kinds of earth. It is also proved by the experiments of various chymists, that there are particles of gold existing in vegetables. Werner assures us, that native gold has always been found in half petrified wood. It is found in various countries in the north of Europe, in nearly all the larger of the East India islands, in various parts of Africa, in several of the Southern States of our own country, but most abundantly in the interiour of South America. Near Akim, however, on the coast of Guinea, one person, we are told, may pick up ten ounces a day.

The valuable qualities of gold render it worthy of the rank which has been assigned to it among metals. Less brilliant than platina, it has a colour more agreeable to the eye. Thus, the poets have not failed to give golden locks to Apollo; a throne of gold to Jupiter; Vulcan employs gold to forge a buckler for Achilles; in short, in the form of an adjective the words gold and beauty were synonymous among the Greeks. Tractable in the hands of art, from its great ductility, gold assumes every form which we wish it to acquire. The goldsmith, the jeweller, the embroiderer, and the gilder, employ it with equal facility. It is capable of the most astonishing superficial extension, thus making up in some measure, for its scarceness, by its ductility. A quantity of one grain's weight, can be beaten out into a sheet, the surface of which will cover fifty square inches, and when used in the gilding of silver wire, its extension is nearly sixteen times greater. A thread of gold 1-10 of an inch in diameter can support a weight of five hundred pounds. Gold is very soft and when coined into money, must be mixed with copper, which gives it a reddish tinge.

Native silver is rarely found pure in the bosom of the earth; it is sometimes mixed with copper and iron, and sometimes with gold, but more frequently with arsenick. Silver is found in quartz, limestone, sulphuretted zinc, and sometimes in petro silex; it is rarely to be met with in granite rocks. It exists in grains, in a thread-like form, in thin laminæ, in ramifications, in octahedral crystals, and sometimes in very considerable masses. It abounds in Mexico, is found in South America, Siberia, Saxony, Norway, and in Germany.

Next to gold and platina, silver is the most unalterable of the metals—its surface only blackens in those places where there are sulphureous and inflammable vapours. It is remarkable that silver, alloyed with a considerable portion of gold or copper, preserves its white colour; whilst a small quantity of silver or copper, mixed with gold, changes very sensibly the colour of this latter metal. This phenomenon, common to all white metals, made Newton imagine, that the particles of white metals have much more surface than those of yellow metals, and that they are also very opaque; so that they cover the gold and copper, without permitting the colour of these metals to pierce through theirs. They ought, on the other hand, to be more thin, because the white light which they reflect, answers to a greater degree of tenuity, than the yellow of gold or copper. According to the experiments of Brisson, and the calculations of Hany, the specifick gravity of a mixture of gold and copper, exceeds the sum of the specifick gravities of the two metals when separate about 1-11. On the contrary, the specifick gravity of a mixture of silver and copper, is less than the total of the specifick gravities of the two metals, by about 1-18. When dissolved in nitrick acid, silver crystallizes under a kind of vegetable or arborescent form, producing what is called the tree of Diana. Silver, though less rare than gold, has been preferred to that metal, as a representative of value; the resistance which it opposes to the action of the air and humidity; its brilliant whiteness, and its malleability, render it applicable to a multiplicity of purposes both useful and ornamental.

Sulphuret of silver, is silver combined with about 4-7 of sulphur. Antimonial sulphuretted silver is commonly called red silver; it bears a lively red colour.

Native mercury is generally found in brilliant and moveable globules, disseminated in clayey schist, in marl, in quartz, and in primitive limestone. It requires so little heat for its fusion, that the atmosphere almost always contains enough to preserve it in the fluid state. The cold of Siberia, however, and of Northern Russia, sometimes converts it into the solid form, which has been erroneously considered as congelation; it is then almost as malleable as tin, and admits of being extended into very thin sheets. It possesses, then, the essential qualities of metals, and approaches the nature of those that are most perfect. Mercury amalgamates with almost all metallick substances, but chiefly with gold, silver, tin and bismuth. The silvering of glass is effected by an amalgam of mercury and tin. This metal is found only in small portions, and at great distances—it seems to fail in countries in the vicinity of the artick pole.

Lead, a substance of very dense structure but extremely deficient in point of hardness, elasticity, and even ductility, claims the rank next to mercury. It is, however, of great utility in its metallick state; conduit pipes, balls and shot, and other plain and coarse implements are made of it. It gives to glass an unctuosity and softness which render it susceptible of being easily cut and polished; and it is to the red oxide of lead that the glass called flint glass, owes the quality which renders it so valuable for the construction of the object glasses of achromatick telescopes,—the quality of divesting the images of those colours, with which they appear to be edged when we view them through a common telescope. The oxides of lead furnish a variety of colours both to the palette of the painter, and the toilet of the modern Lais.

Lead is generally found mineralized by sulphur forming an ore commonly called galena, which is almost always mixed with iron, with antimony and especially with silver. It is found in almost every part of Europe, and in great abundance in the western and south-western parts of the United States. Carbonate of lead, or mineral white lead, is an oxide mineralized by carbonick acid, and often accompanies galena. Molybdate of lead, or the oxide mineralized by molybdick acid, is found in Carinthia; it generally bears the name of yellow-lead. The red lead of Barezof in Siberia is mineralized by the chromick acid.

Nickel is not a very ductile metal; it is of no use in the arts, but it possesses some magnetick properties. It generally accompanies cobalt, an equally magnetick substance; these two metals, of a nature nearly allied to that of iron, and often containing particles of it, seem to occur most plentifully in the north. Nickel is also an invariable constituent of meteorick stones, and the masses of native iron formed on the earth's surface.

Native copper is not uncommon. It occurs in large amorphous masses in some parts of the United States, and is sometimes found in octahedral crystals, or in forms allied to the octahedron. The metallick copper of commerce is extracted chiefly from the native sulphuret.

Copper is distinguished from all other metals, titanium excepted, by having a red colour. It receives a considerable lustre by polishing. Its density is increased by hammering. It is both ductile and malleable, and in tenacity is inferiour only to iron. It is hard and elastick, and consequently sonorous. In fusibility it stands between silver and gold. Exposed to the air, or to damp, it is very soon covered with that rust known under the name of verdigris, which is one of the most active poisons. When melted and refined, it is called purified or rose copper, which is less dense than native copper. What we call yellow copper, or brass, is a compound of copper and zinc, which is obtained by the cementation of copper with calamine, and which, from being less subject to rust, furnishes the watchmaker, the mechanical philosopher, and the geometrician, with so many instruments of general use, exquisitely delicate in their workmanship, and of great durability. But if the two metals are directly united by fusion, the mixture takes the names of pinchbeck, tomback, and gold of Manheim. Bronze is made by uniting a certain quantity of tin with copper; it is more elastick and sonorous than pure copper. Cannons and many statues are made of bronze. Copper is found in abundance throughout the northern and southern extremities of the globe, but disappears in the vicinity of the equator.

Cobalt is a brittle metal, of a reddish gray colour, and weak metallick lustre. White cobalt is frequently found in veins in some of the secondary mountains of the interiour of Europe. Arsenical cobalt exists only in the primitive rocks, and is accompanied by quartz and primitive limestone. This mineral makes a fine blue glass, called smalt, which, in a pulverized state, is known under the name of Saxon blue.

The tin of commerce, known by the names of block and grain tin, is procured from the native oxide by means of heat and charcoal. The best grain tin is almost chymically pure, containing according to Dr. Thomson, very minute quantities of copper and iron, and occasionally of arsenick. Tin has a white colour, and a lustre resembling that of silver. In ductility and tenacity it is inferiour to several metals. When heated to whiteness, it takes fire and burns with a white flame. It is found in England, Saxony and Bohemia, in the East Indies, and in small quantities in Africa and South America.

Iron is profusely distributed throughout nature. It enters either as a colouring or a combining principle into a great number of mineral substances; it is a stranger neither to vegetables, whose tints it enlivens, nor to animals, upon whom it exerts a salutary influence. As an insulated substance, it is found in almost every part of the world; it is however, more common, or at least, accessible to our researches in the northern temperate zone, particularly towards the northern part of it. As nature produces it, it is very different from that whose appearance and use are so familiar to us. It is usually nothing but an earthy mass, a dirty and impure rust; and even when iron presents itself to us in the mine with metallick brightness, it is still very far from possessing the qualities required for the multiplicity of uses to which it can be applied. While man need only purify gold, he must, if the expression be allowed, create iron. This metal is generally susceptible of three different states. What is called cast or pig iron, is the metal after its first fusion, deprived of more or less of its oxygen, and combined with a part of the carbon with which it came in contact in the casting furnace. Cast iron is rendered malleable by exposure in a reverberatory furnace to the combined action of air and intense heat; though it is generally supposed to be peculiar to iron, that of the two properties of fusibility, and ductility under the hammer, it can possess the one only at the expense of the other. After the process to render it ductile, iron is found in the greatest state of purity to which art can bring it. It is then exposed to the action of a large hammer, whose redoubled strokes, by bringing the metallick particles into closer contact, unite them more perfectly together, and render the iron ductile. It is then called forged iron. In this new state it is no longer fusible; and the most violent heat of our furnaces can at most only soften it, and convert it into a kind of paste. Forged iron, placed in contact with carbonaceous substances, and again softened by the action of fire, till it enters into combination with these substances, or rather with the carbon which they contain, is converted into steel. The operation of tempering which steel undergoes does not change its nature, it only varies the arrangement and aggregation of its particles; it augments at once its hardness, its brittleness, and its volume, and gives it a coarser grain than that of steel not tempered. Thus the difference between cast iron, forged iron, and steel, depends on two principles, namely, oxygen and carbon: their union constitutes cast iron; the absence of both, at least in a perceptible quantity, characterizes forged iron; and in steel, carbon exists alone without oxygen.

Vitriol of iron is nothing else than the sulphate of iron, and is of great service in dying; it is used as the principle of black colour, from the property which gall nuts and other astringent vegetables possess, of precipitating iron contained in the vitriol, under the form of black particles of extreme fineness.

Emery is an oxide of iron, intimately united with alumina and silex. This substance is valuable in the arts, on account of its great hardness. By grinding it in steel mills, it is reduced to a powder whose sharp and hard particles can, by the application of friction, give a polish to all existing substances, except the diamond.

Zinc, which forms the connecting link between the ductile metals, and those which are not so, is obtained either from calamine, the native carbonate of zinc, or from the native sulphuret, the *zinc blende* of mineralogists. It has a strong metallick lustre, and a bluish white colour. It is a hard metal, being acted on by the file with difficulty; but it is both malleable and ductile. Heated to full redness in a covered crucible, it burns into flame as soon as the cover is removed, and burns with a brilliant white light. Zinc is found in England, in various parts of northern Europe, and in India.

Bismuth, from its great fusibility, is used for alloys with various other metals; it is found in the primitive mountains, and occurs attached to jasper. It is used in the composition of printers' types, soft solder, &c. It may be fused in the flame of a candle; alloyed with lead and tin in certain proportions, it melts in boiling water. It has a reddish white colour, and considerable lustre.

Arsenick serves to mineralize a great number of metals; rubbed or warmed, it discovers itself by the smell of garlick, which it emits. It is a very brittle metal, of a strong metallick lustre, and of a steel gray colour. The oxide of arsenick, under the form of a white powder, constitutes one of the most violent poisons.

Molybdenum is of ancient formation—small masses of it are found in various portions of northern Europe It is a brittle metal, very infusible, and of a white colour. Its properties are imperfectly known.

Manganese is a colouring principle very extensively distributed in nature. It is that which gives a violet hue to the crystals of fluate of lime. It is a hard brittle metal, of a grayish white colour, and granular texture.

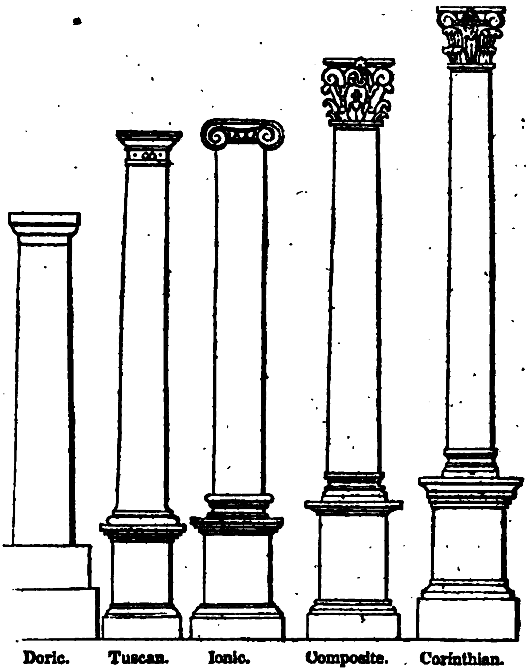
Antimony, once celebrated in the laboratories of the alchymists, who hoped to discover in it the philosopher's stone, is now employed with success in the composition of various medicines, in casting types, and as an alloy with tin to form what is called prince's metal. It is found native in quartz and primitive limestone; sulphuretted or gray in the primitive mountains, and often united with galena. It is brittle, of a bluish gray colour and considerable lustre.

Titanium is found in a state of red oxide, under the form of a ferruginous stone, and united with silex and lime. It is found in minute crystals, so hard that they scratch a polished surface of rock crystal. Tellurium, uranium, scheelin, chrome which colours the emerald, cerium, columbium insoluble in acids and found in the United States, and several other metals, have not yet acquired sufficient importance to claim our attention at present. We have thus given a tolerably full catalogue of the principal simple substances which compose the solid part of the globe.

ARCHITECTURE.

As architecture is rapidly assuming the dignity of a science in our country it may be gratifying to our readers to possess a general idea, at least, of the different forms and characteristicks of the various orders. There are generally three styles of architecture that bear national characteristicks, viz.: the Grecian and Roman, the Egyptian, and the Hindoo. The first is generally made to consist of five orders, namely, Doric, Tuscan, Ionic, Composite and Corinthian. The Egyptian, and Hindoo are not so definitely arranged, but consist of a great variety of styles. We intend to introduce now a few specimens only of the different styles by way of contrasting them, and describe the most ancient first. The Grecian and Roman styles, which our architects principally adopt we shall more particularly describe at a future time.

GRECIAN AND ROMAN COLUMNS.



The Hindoo is considered the most ancient of the three styles, and partakes in a great degree of the characters of the Persian architecture, and of the fragments found at the ruins of Persepolis, both of which are supposed to be of even still greater antiquity than the Hindoos.

The Hindoo columns are much lighter in form and more covered with minute ornaments than the Egyptian, while the Grecian and Roman orders are distinguished from both; from the Egyptian by their more slender and graceful appearance, and from the Hindoo by their greater simplicity and ornament.

The different ornaments and carvings on the Egyptian columns were originally painted of various colours, and these colours were all what are called mineral colours; that is, they were prepared from metals, earths, and other mineral substances: and so advanced must the Egyptians have been in chymistry, that although these colours have been, in some instances, exposed to the air for nearly three thousand years, they are still as bright and perfect as if they had been only lately applied. To account for the massive form of the Egyptian columns, we must remember that many of their temples were not built, but absolutely excavated from the solid rock; and when they were constructed of different pieces of stone, the blocks of which they were formed were of immense weight, it being necessary that they should reach from column to column; the arch (by which numerous stones, when properly placed, are made to support each other by their own weight,) was not at that time invented.

The architects of Hindostan appear to have been held in great estimation, and were evidently related to the chief people of the country. In an ancient work on architecture, the following singular observations occur on the requisite qualifications of the different artisans employed in building.

"An architect (*sthapati*) should be conversant in all sciences; ever attentive to his avocations; of an unblemished character; generous, sincere, and devoid of enmity and jealousy.

"Of nearly equal qualifications with him, should be the (*sutragrahi*); he may be either the son or disciple of the (*sthapati*); he should be particularly skilled in mathematicks, and be strictly obedient to the will of the (*sthapati*).

"A (*tacshaca*), who is thus called from part of his avocation being to pare rough wood, should be of a cheerful temper, and well versed in all mechanical arts.

"A (*vardhaci*) is he who is dexterous in joining wood, and uniting other materials one with another; he should be of a calm disposition, and acquainted with drawing and perspective.

"As it is impossible to build houses, and the like, without the aid of the four descriptions of artisans, let the enlightened *twice-born** gratify them in every respect, so that buildings may be erected.

"Wo to them who dwell in a house not built according to the proportions of symmetry. In building an edifice, therefore, let all its parts, from the basement to the roof, be duly considered."

Great care was also taken in the choice of the ground for the purpose of building on, and many ceremonies were performed previous to the commencement of the undertaking.

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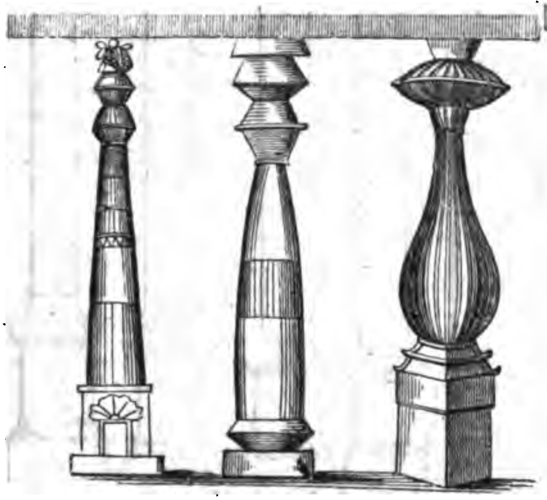
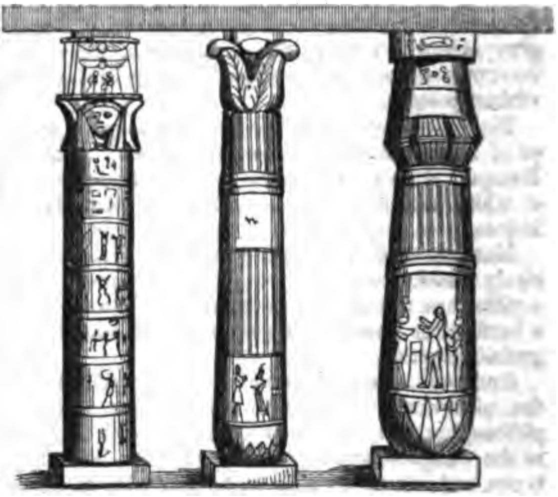
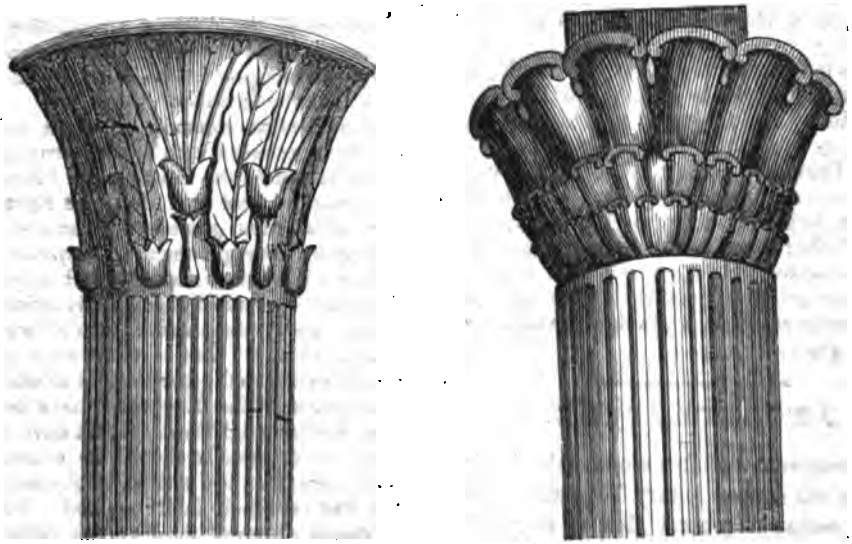
* Brahmins and others, belonging to the first, second, and third classes of Hindoos.



HINDOO COLUMNS.



EGYPTIAN COLUMNS.



EGYPTIAN CAPITALS.

ESSAY ON THE EDUCATION OF FEMALE TEACHERS, FOR THE UNITED STATES.

BY CATHERINE E. BEECHER.

(*Concluded from page* 102.)

Here, we have no despotick monarch to endow seminaries for teachers, and to send every child in the nation to school for seven successive years, to place a Bible in every school, and enforce a system of moral and religious instruction. It is the people who must voluntarily do it, or it will remain undone. Publick sentiment must be aroused to a sense of danger; the wealthy and intelligent must pour out their treasures to endow seminaries for teachers; moral and religious education, and the best methods of governing and regulating the human mind, must become a science; those who have had most experience, and are best qualified in this department, must be called upon to contribute their experience and combined efforts, to qualify others for these duties; men of talent and piety must enter this as the noblest and most important missionary field; females who have time and talents, must be called to aid in the effort; seminaries for teachers, with their model schools, must be established in every state; agents must be employed to arouse and enlighten the people; and, when the people are sufficiently awake to the subject, legislative and national aid must be sought.

The object aimed at is one immense and difficult enough to demand the highest exercise of every energy, and every mode of influence. If Prussia, with her dense population, finds one teacher for every ten children needful, the sparseness of population in our wide territories surely demands an equal supply. At this rate, *ninety thousand* teachers are this moment wanted to supply the destitute; and to these must be added every year *twelve thousand*, simply to meet the increase of population. But if we allow thirty pupils as the average number for every teacher, then we need *thirty thousand* teachers for present wants, and an annual addition of *four thousand* for increase of population. And yet, what has been done—what is now doing—to meet this enormous demand?* While Prussia, for years, has been pouring out her well educated teachers from her forty-five seminaries, at the rate of one for every ten pupils; while France is organizing her Normal schools in all her departments for the education of her teachers; what is done in America,—wealthy, intelligent, and free America,—whose very existence is depending on the virtuous education of her children? In New England, we hear of one solitary institution for the preparation of teachers; and, in New York, eight are just starting into being; and this is all! Now, at this moment, we need at least thirty thousand teachers, and four thousand every year in addition, just to supply the increase of youthful population. And we must educate the nation, or be dashed in pieces, amid all the terrours of the wild fanaticism, infidel recklessness, and political strife, of an ungoverned, ignorant, and unprincipled populace. What patriot, what philanthropist, what Christian, does not see that all that is sacred and dear in home, and country, and liberty, and religion, call upon him to waken every energy, and put forth every effort?

Does the heart fail, and the courage sink, at the magnitude of the work, and the apparent destitution of means? We have the means—we have the power. There is wealth enough, and benevolence enough, and self-denying labourers enough. Nothing is wanting but a knowledge of our danger, our duty, and our means, and a willing mind in exerting our energies. Our difficulties and danger have been briefly noticed. It is the object of this essay to point out one important measure in the system of means that must be employed.

When we consider the claims of the learned professions, the excitement and profits of commerce, manufactures, agriculture, and the arts; when we consider the aversion of most men to the sedentary, confining, and toilsome duties of teaching and governing young children; when we consider the scanty pittance that is allowed to the majority of teachers; and that few men will enter a business that will not support a family, when there are multitudes of other employments that will afford competence, and lead to wealth; it is chimerical to hope that the supply of such immense deficiencies in our national education is to come chiefly from that sex. It is woman, fitted by disposition, and habits, and circumstances, for such duties, who, to a very wide extent, must aid in educating the childhood and youth of this nation; and therefore it is, that females must be trained and educated for this employment. And, most happily, it is true, that the education necessary to fit a woman to be a teacher, is exactly the one that best fits her for that domestick relation she is primarily designed to fill.

But how is this vast undertaking to be accomplished? How can such a multitude of female teachers as are needed, be secured and fitted for such duties? The following will show how it *can* be done, if those most interested and obligated shall only *will* to have it done.

Men of patriotism and benevolence can commence by endowing two or three seminaries for female teachers in the most important stations in the nation, while to each of these seminaries shall be attached a model school, supported by the children of the place where it is located. In these seminaries can be collected those who have the highest estimate of the value of moral and religious influence, and the most talents and experience for both intellectual and moral education.

When these teachers shall have succeeded in training classes of teachers on the best system their united wisdom can devise, there will be instructers prepared for other seminaries for teachers, to be organized and conducted on the same plan; and thus a regular and systematick course of education can be disseminated through the nation.

Meantime, proper efforts being made by means of the press, the pulpit, and influential men employed as agents for this object, the interest of the whole nation can be aroused, and every benevolent and every pious female in the nation, who has the time and qualifications necessary, can be enlisted to consecrate at least a certain number of years to this object. There is not a village in this nation that cannot furnish its one, two, three, and in some cases ten or twenty, labourers for this field.

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* The statisticks of this subject may be found in the Annals of Education.

And, as a system of right moral and religious education gains its appropriate influence, as women are more and more educated to understand and value the importance of their influence in society, and their peculiar duties, more young females will pursue their education with the expectation that, unless paramount private duties forbid, they are to employ their time and talents in the duties of a teacher, until they assume the responsibilities of domestick life. Females will cease to feel that they are educated just to enjoy themselves in future life, and realize the obligations imposed by Heaven to live to do good. And, when females are educated as they ought to be, every woman at the close of her school education, will be well qualified to act as a teacher.

The establishment of institutions for the education of female teachers, would also most successfully remedy all the difficulties in regard to female education which have been exhibited. When female teachers are well trained for their profession, a great portion of the higher female schools will be intrusted to their care, and they will be prepared to co-operate in propagating a uniform and thorough system of female education, both intellectual and moral. When such teachers are scattered through the land, they will aid in enlightening the publick mind in regard to permanently endowed institutions for females. By this means, also, essential aid will be rendered in advancing improvements in regard to physical education, in introducing useful exercise, in promoting a national taste for musick, and in various other modern improvements.

Add to these views the fact, that there is now a great amount of female benevolence and activity unemployed for want of suitable opportunities. The writer of this article has had painful occasion to realize this. Having for years been in a situation which secured an extensive acquaintance in all parts of the country, and having been regarded as a source of information by many who were anxious to obtain teachers, and also by females who were desirous to secure either the education or the situation of a teacher, it has been heart-sickening to witness the intense interest that exists in all parts of the nation to obtain good teachers, and at the same time to know the earnest longing of many energetick and benevolent females to secure such situations as were offered, and yet to feel utterly unable to lend any aid to either.

The want of health to undertake such a correspondence and to assume such responsibilities as were demanded, together with the pressure of other obligations, made it an imperious duty to turn a deaf ear to all such applications. But it is believed that, during the last two years, the writer could have supplied more than a hundred towns and villages of the west with teachers, who would have been comfortably, and in many cases most liberally, supported, had the teachers been on the ground and at command. At the same time, extensive acquaintance, correspondence, and travelling, have led to the conviction that there are hundreds of benevolent and self-denying females, who are actually pining for something more worthy of their interest and efforts than they can now find in their limited spheres.

Many such are to be found in the higher circles In more cases than one, confidential communications have been received, stating that the writer was in the possession of leisure, and property, and education, and yet without any thing to do that equalled her desires or abilities; expressing her interest in the cause of education, her desire to become a teacher, and the unwillingness of friends to promote her wishes, on the ground that they were wild and impracticable. To this were added entreaties for advice and assistance, if such wishes and plans were not deemed visionary and unreasonable.

In other classes of society, the increase of manufactures has removed so much domestick employment from female hands among the common yeomanry of the country, that multitudes of females in this class most joyfully would embrace the employment of teachers, could any method be devised for preparing and locating them. Few know or realize the amount of Christian benevolence which is slumbering in female bosoms, which could be most delightfully and beneficially employed to elevate and save our country. A great proportion of this is to be found among those who have not the means of securing an education; and many who could discharge the humbler duties of instruction, have no means of obtaining proper locations.

We need institutions endowed at publick expense, and so constituted, that, while those who are able shall pay the full value of their privileges, those who have not the ability shall be furnished gratuitously with what they cannot purchase; while all who receive these advantages shall consider themselves pledged to devote themselves to the cause of education, and also to refund their expenses, whenever future earnings, or a change in their situation, will enable them to do it. And if men of wealth will furnish the means, if they will collect the talent and experience that are ready to engage in the enterprise, they will soon find multitudes of labourers hastening to the field. As things now are, few females of discretion and good sense would attempt, unaided, what their friends, and most of the community, would deem the Quixotick enterprise of preparing themselves to be teachers, and then set out to seek a situation in the destitute portions of our country. But let benevolent men unite in endowing institutions for those who are unprepared, and secure some organization of suitable persons, whose business it shall be to provide places for those who are prepared; let statisticks of the wants of the country be sent abroad, and the cry go forth "Whom shall we send, and who will go for us?" and from amid the green hills and white villages of New England, hundreds of voices would respond, "Here am I, send me;" while kindred voices, through the whole length of the land, would echo the reply.

In behalf of such then it is, that the writer would address this intelligent and patriotick assembly, and through them the benevolent and philanthropick of the nation: Give us the opportunity of aiding to preserve the interests and institutions of our country. Send us to the thousands of destitute children whom we should rejoice to train up in virtue, and prepare for Heaven. We relinquish the pursuit of wealth, the paths of publick honour, and the strife for patronage and power; give us the humble, sacred, delightful pleasures of benevolence While, on earth, we seek not the plaudits of fame, and rear no fabricks of splendour and renown; while, like the little insects that build beneath the waters, we toil unnoticed and unknown, give us the pleasing consciousness that we are silently raising monuments of beauty and glory, that shall stand in the light of Heaven through everlasting years.

TO THE APPENINES.

BY WILLIAM C. BRYANT.

Your peaks are beautiful, ye Appenines!
In the soft light of these serenest skies;
From the broad highland region, black with pines,
Fair as the hills of paradise they rise,
Bathed in the teint Peruvian slaves behold
In rosy flushes on the virgin gold.

There, rooted to the aerial shelves that wear
The glory of a brighter world, might spring
Sweet flowers of heaven to scent the unbreathed air.
And heaven's fleet messengers might rest the wing,
To view the earth in its summer sleep,
Silent, and cradled by the glimmering deep.

Below you lie men's sepulchres, the old
Etrurian tombs, the graves of yesterday;
The herd's white bones lie mixed with human mould—
Yet up the radiant steeps that I survey
Death never climbed, nor life's soft breath, with pain,
Was yielded to the elements again.

Ages of war have filled these plains with fear,
How oft the hind has started at the clash
Of spears, and yell of meeting armies here,
Or seen the lightning of the battle flash
From clouds that rising with the thunder's sound,
Hung like an earth-born tempest o'er the ground.

Ah me! what armed nations—Asian horde,
And Lybian host—the Scythian and the Gaul,
Have swept your base and through your passes poured,
Like ocean-tides uprising at the call
Of tyrant winds—against your rocky side
The bloody billows dashed, and howled, and died.

How crashed the towers before beleaguering foes,
Sacked cities smoked, and realms were rent in twain;
And commonwealths against their rivals rose,
Trode out their lives and earned the curse of Cain;
While in the noiseless air and light that flowed
Round your far brows eternal Peace abode.

Here pealed the impious hymn, and altar flames
Rose to false gods, a multitudinous throng;
Jove, Bacchus, Pan, and earlier, fouler names,
While, as the unheeding ages passed along,
Ye, from your station in the middle skies,
Proclaimed the essential Goodness, strong and wise.

In you the heart that sighs for freedom seeks
Her image; there the winds no barrier know,
Clouds come and rest and leave your fairy peaks;
While even the immaterial Mind, below,
And Thought, her winged offspring, charmed by power,
Pine silently for the redeeming hour.

PETRIFIED BUFFALO.

This extraordinary curiosity was discovered about two years since, by some trappers belonging to Captain Bent's company, lying on the side of one of the beaver dams of the Rio Grande of the North, (a stream emptying itself into the Gulf of California,) whose waters, it is said, possess the petrifying qualities to an eminent degree, its shores abounding in specimens of various animal and vegetable productions in a petrified state. The petrified Buffalo is described by those who have seen it, to be as perfect in its petrifaction as when living, with the exception of a hole in one of the sides, about four inches in diameter, around which the hair has been worn off, probably by the friction of the water, in which it must have lain for ages past, to have produced such a phenomenon. The hair on the bump and shoulders, neck, forehead, and tail, though concreted into almost a smooth surface, may be easily discerned. The horns, eyes, nostrils, mouth, and legs, are as perfect in their stone, as in their pristine state.

The country in which this rare specimen was found, is inhabited by the Euteaux, a roving tribe of savages, who subsist, a great portion of their lives, on insects, snakes, toads, roots, &c. The tribe being particularly hostile to the whites, renders the acquisition of this curiosity an undertaking not a little hazardous; notwithstanding this, and many other difficulties to be surmounted, such as distance, expense, &c., Captain Bent contemplates procuring and bringing it to the United States during the ensuing autumn. The curious may therefore anticipate an extraordinary treat in the course of the winter.

FAIRIES.

Almost all nations have, in ignorant times, possessed a strong belief in the supernatural, which has been continued to the present day, among the unenlightened. Wild and terrifick scenes were peopled by the imagination with fierce and fearful beings, while flowery dells, sequestered glades, green and smiling forests, and pleasant water-falls, were selected as the haunts of a gentler, and more graceful race of beings, than belongs to humanity.

Pastoral nations delighted to picture forms of miniature elegance, whose habitations were delicate and fragrant flowers. The fairy queen Titania hung like a bee or butterfly, within a hairbell, or led the gay dance by moonlight, over roses, without bending the most fragile floweret leaf beneath her footstep. The beings called fairies were at first termed elves, the word *elf* originating with the Saxons, who, from remote antiquity, believed in them.

The Laplanders, Icelanders, and inhabitants of Finland, believed in the existence of fairies. Many affirmed that they had had intercourse with them, and had been invited to their subterranean retreats, where they were hospitably entertained. The little men and women handed round wine and tobacco, with which the mortal visiters were supplied in abundance, and afterwards sent them on their way, with good advice, and an honourable escort. Up to this time, these people boast of mingling in the magical ceremonies and dances of the fairies.

The word fairy is thought by most writers, to be derived from the Persian, and the character of the English fairies and the Persian *Peris* is similar. The Peris of the Orientals, are represented as females of exquisite beauty, and great gentleness, who are not permitted to reside in Heaven. They are not however of earth. They live in the colours of the rainbow, among the gorgeously-tinted clouds, and are nourished by the fragrance of sweet flowers.

The Dives of the Persians were spirits of the male sex, with habits and dispositions, directly contrary to those of the Peris. They were malevolent, cruel, and fierce, and described as hideous in their appearance. Huge spiral horns sprang from their heads, their eyes were large and staring, their claws sharp and their fangs terrifick. Covered with shaggy hair, and having long rough tails, it seemed as if they possessed every deformity. The Dives warred with mankind, and pursued the Peris with unrelenting hatred. Their lives, however, were limited, and they were not incapable of feeling personal violence.

The fancies of the inhabitants of the East, teem with supernatural beings. The Genii, spirits of vast size, were said to have been imprisoned by Solomon, who shut them up in caskets, upon which he placed his seal. Some were thrown into rivers. A fisherman once drew one up from the bottom of a stream in his net, and the vessel being opened, a dense smoke arose from the interiour. The smoke gradually assumed a vast figure of a Genius. The whole story is related in the Arabian Nights' Entertainments.

Fairies of a certain class, such as the warlike elves or fays, were believed to exist by all European nations. During times of military enthusiasm, the fancy of warriours saw processions of fairies, well-armed and mounted, bearing gorgeous banners; their weapons glittering in the moonlight, or gleaming like lightning on the darkness of the night. A Bohemian legend says that a certain knight, travelling with a friend, met one of these nocturnal processions, and, disregarding the caution of his companion, spurred his horse forward to attack them. Horse and rider were found dead upon the spot in the morning.

The Swedes asserted that there was a certain class of supernatural beings, pretty much the same as the Brownies of Scotland, who assisted the miners, laboured in the shafts, and were far more ingenious than mortal workmen.

The fairies of England were generally of a harmless disposition. Oberon and Titania, the fairy king and queen, were pleasant little people, with a spice of humanity in their dispositions. Robin Goodfellow was a mischievous little creature, but not very spiteful. He was represented like a rustick, "in a suit of leather, close to his body, his hands and face russet colour, with a flail."

The Scottish fairies were certainly guilty of great deviations from the path of honesty. One of their greatest sins was that of stealing fine children, from their cradles, and leaving in the place of a healthy infant, a rickety and deformed being. The elves often stole away wives from their husbands, and these women were only to be regained by confronting the fairy procession on a certain night, within a day and a year, after the loss, which time was allowed the bereaved mortals for restitution.

The electrical circles which are sometimes found upon the turf were believed to be fairy rings, within which it was thought dangerous to sleep, or to be found after sunset. The Scotch fairies were of diminutive stature, of a doubtful nature, capricious and very resentful. The Scotch were afraid to speak of them disrespectfully, and even called malicious spirits, "gude people."

These fairies lived in green hills, on which they danced by moonlight. The interiour of their habitations is described as presenting a most beautiful appearance, brilliant with glittering gold and gems, and containing every thing which a splendid fancy could contrive. But as "all is not gold that glitters," these fine appearances are said to be a show, put on to conceal a mean or repulsive reality.

These little beings are admirable riders, and the best judges of horses in the world. They go about in large companies by night, when their presence is disclosed by the shrill, bell-like ringing of their bridles. When the little men find their steeds jaded, they do not scruple to continue their pleasure at the expense of mortals. They steal horses, and ride them almost to death. The animals are found in the morning in their stalls panting and flecked with foam, with their manes and tails matted and twisted. The shrewd reader will guess that the fairies often had to bear the blame, which belonged to careless grooms.

A sailor on the Isle of Man, who was riding to visit his sister, was invited by a party of jolly fairies who were hunting, to join them in their excursion. Not being aware of the nature of the little men, who made a gay appearance, as they swept by in green dresses, riding to the musick of a mellow horn, Jack followed on, delighted, and only learned his danger when he arrived at his sister's house.

These diminutive huntsmen used to seize upon the horses which English residents brought over to the Isle of Man, and ride them without ceremony. A gentleman of the island attributed the loss of half a dozen capital hunters, to the little men in green.

Sometimes they were more honest, and paid good money for horses, to which they took a fancy. A man who had a fine horse to sell, was once riding his steed among the mountains, when a dapper little gentleman stepped up, and examined it. He made the animal show his paces, and, after some haggling about the price, bought him. All this was well enough; but when the seller dismounted, the purchaser, having fixed himself in the saddle, sank through the earth with his bargain. The man who beheld all this, was somewhat startled, but as there was no mistake about the hard red gold which he had received from the fairy horseman, he put it in his pocket, and marched off.

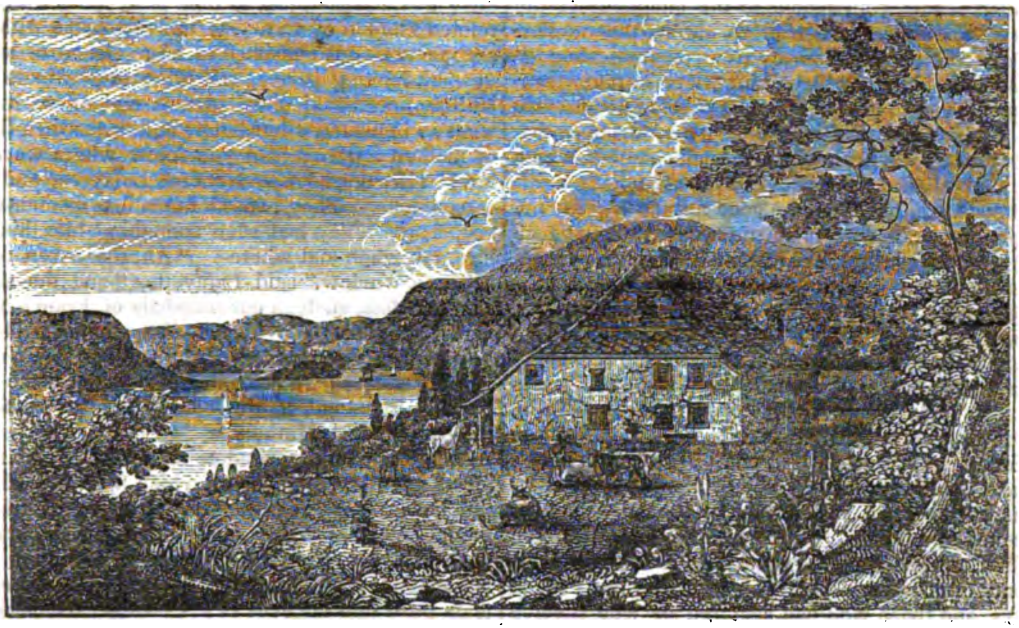
The Brownies were singular beings. The Brownie attached himself to some family, performing menial offices with a good grace, like a hired servant. But unlike a servant, he did not labour in the hope of wages, on the contrary an offer of recompense drove this delicate gentleman away. He was fond of stretching himself at length before the fire, like a dog, and this appeared to give him the highest satisfaction.

An amusing anecdote is told concerning this habit. A Brownie who had attached himself to a certain house, used to hover round the kitchen, uneasy if the servants sat up late, which prevented him from occupying his place upon the hearth. Sometimes the impatient Brownie appeared at the door, and admonished the servants in the following terms:—"Gang a' to your beds, sirs, and dinna put out the wee grieshoch,"—thus anglicised, "Go to your beds, all of you, and don't put out the few embers." The Brownie left the hearth at the first crow of the cock.

The inhabitants of Germany believe to this day, that there exists a race called the *Stille Volke*, the silent people. To every family of eminence, a family of the *Stille Volke* is attached, containing just as many members as the mortal family. When the lady of the mortal family becomes a mother, the queen of the *Stille Volke* enjoys the same blessing, and the silent people endeavour to ward off any injury which threatens those whom they protect.

It would be impossible to enumerate all the different sprites with which superstition has filled the woods, waters, hills, and valleys of Europe. A few of the most agreeable elves have been touched upon. It is not worth while to present the darker features of a gloomy superstition, to the contemplation of the young. The *Kelpies* and the *wild Huntsmen* have found no place in this sketch.

The legends of the Irish are generally gay, exhibiting the character of that poor, but pleasant people. The Irish fairies are spruce little gentlemen, and merry little ladies, who trip it away with blithe hearts, and light footsteps upon their favourite and beautiful places of resort. Poor people delight to describe wealth and splendour, which they do not possess, and accordingly, in the tales of the Irish, the palaces of the "good people," are full of gold and brilliance.—*Cyclopædia of History*.



WASHINGTON'S HEADQUARTERS, NEWBURGH, N. Y.

The old Hasbrook-house, as it is called, situated on the west bank of the Hudson, a little south of the village of Newburgh, is one of the most interesting relicks of the first and heroick age of our republick; for at several periods of the war of the revolution, and especially from the autumn of 1782 until the troops were finally disbanded, it was occupied by General Washington, as the headquarters of the American army.

The views from the house and grounds, as well as the whole neighbourhood around it, are rich alike in natural beauty and historical remembrances. You look from the old house upon the broad bay into which the Hudson expands itself, just before entering the deep, rocky bed, through which it flows towards the ocean between the lofty mountain-banks of the Highlands. On the opposite shore, is seen the ridge of mountains, upon the bald rocky summits of which, during the war of 1776, the beacon-fires so often blazed to alarm the country at the incursions of the enemy from the south, or else to communicate signals between the frontier posts in Westchester, along the line of the American position at Verplanck's Point, West Point, and the barracks and encampments on the plains of Fishkill. As these mountains recede eastward from the river, you see the romantick stream of Mattavoan winding wildly along their base, through glens and over falls, until, at last, as if fatigued with its wanton rambles, it mingles quietly and placidly with the Hudson. On this side of it are stretched the rich plains of Dutchess county, with their woody and picturesque shores. All along these plains and shores are to be found other memorials of the revolution; for there were the storehouses, barracks, and hospitals of our army, and there, for many months, were the headquarters of the father of American tacticks, the disciplinarian Steuben. To the south, you look down upon the opening of the Highlands and the rock of Pollopell's Island, once a military prison, and thence follow, with your eye, the Great River of the Mountains* till it turns suddenly and disappears around the rocky promontory of West Point; a spot consecrated by the most exciting recollections of our history, by the story of Arnold's guilt and Andre's hapless fate, and the incorruptible virtue of our yeomanry; by the memory of the virtues of Kosciusko and Lafayette; of the wisdom and valour of our own chiefs and sages.

The Hasbrook-house itself, is a solid, irregular building of rough stone, erected about a century ago. The excellent landscape, painted by Weir, and engraved with equal spirit and fidelity by Smillie, will give the reader a better idea of its appearance and character than words can convey. The interiour remains very nearly as Washington left it. The largest room is in the centre of the house, about twenty-four feet square, but so disproportionately low, as to appear very much larger. It served the general during his residence there, in the daytime, for his hall of reception and his dining-room, where he regularly kept up a liberal, though plain hospitality. At night it was used as a bedroom for his aiddecamps and occasional military visiters and guests. It was long memorable among the veterans who had seen the chief there, for its huge wood fire, built against the wall, in, or rather under a wide chimney, the fireplace of which was quite open at both sides. It was still more remarkable for the whimsical peculiarity of having seven doors, and but one window. The unceiled roof of this room, with its massive painted beams, corresponds to the simplicity of the rest of the building, as well as shows the indifference of our ancestors to the free communication of noise and cold air, which their wiser or more fastidious descendants take so much pains to avoid. On the northeast corner of the house, communicating with the large centre-room, is a small chamber, which the general used as a study, or private office.

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* The Indian name of the Hudson.

Those who have had the good fortune to enjoy the acquaintance of officers of the northern division of our old army, have heard many a revolutionary anecdote, the scene of which was laid in the old square room at Newburgh, "with its seven doors and one window." In it were every day served up, to as many guests as the table and chairs could accommodate, a dinner and a supper, as plentiful as the country could supply, and as good as they could be made by the continental cooks, whose deficiency in culinary skill drew forth in one of his private letters (since printed) the only piece of literary pleasantry, it is believed, in which the great man was ever tempted to indulge. But then, as we have heard old soldiers affirm with great emphasis, there was always plenty of good wine. French wines for our French allies, and those who had acquired or who affected their tastes, and sound Madeira for the Americans of the old school, circulated briskly, and were taken in little silver mugs or goblets, made in France for the general's camp equipage. They were accompanied by the famous apples of the Hudson, the Spitzenbergh and other varieties, and invariably by heaped plates of hickory nuts, the amazing consumption of which, by the general and his staff, was the theme of boundless admiration to the Marquis de Chastelleux and other French officers. The jest, the argument, the song, and the story, circulated as briskly as the wine; while the chief, at the head of his table, sat long, listened to all, or appeared to listen, smiled at and enjoyed all, but all gravely, without partaking much in the conversation or at all contributing to the laugh, either by swelling its chorus or furnishing the occasion; for he was neither a joker nor a story-teller. He had no talent, and he knew he had none, for humour, repartee, or amusing anecdote; and if he had possessed it, he was too wise to indulge in it in the position in which he was placed.

One evidence, among many others, of the impression which Washington's presence in this scene had made, and the dignity and permanence it could lend to every idea or recollection, however trivial otherwise, with which it had been accidentally associated, was given some few years ago at Paris.

The American minister (we forget whether it was Mr. Crawford, Mr. Brown, or one of their successors), and several of his countrymen, together with General Lafayette, were invited to an entertainment at the house of a distinguished and patriotick Frenchman, who had served his country in his youth in the United States, during the war of our independence. At the supper hour the company were shown into a room fitted up for the occasion, which contrasted quite oddly with the Parisian elegance of the other apartments, where they had spent their evening. A low, bearded, painted ceiling, with large beams, a single, small, uncurtained window, with numerous small doors, as well as the general style of the whole, gave at first the idea of the kitchen, or largest room of a Dutch or Belgian farmhouse. On a long rough table was a repast, just as little in keeping with the refined kitchen of Paris, as the room was with its architecture. It consisted of large dishes of meat, uncouth-looking pastry, and wine in decanters and bottles, accompanied by glasses and silver mugs, such as indicated other habits and tastes than those of modern Paris. "Do you know where we now are?" said the host to General Lafayette and his companions. They paused for a few moments, in suspense. They had seen something like this before, but when and where? "Ah, the seven doors and one window," said Lafayette, "and the silver camp-goblets, such as our marshals of France used in my youth! We are at Washington's Headquarters on the Hudson, fifty years ago!" We relate the story as we have heard it told by the late Colonel Fish, and, if we mistake not, the host was the excellent M. Marbois.

There is another anecdote of a higher and more moral interest, the scene of which was also laid in this house. We remember to have heard it told by the late Colonel Willet, our "bravest of the brave," then past his eightieth year, with a feeling that warmed the coldest of his hearers, and made the tears gush into the eyes of his younger listeners.

A British officer had been brought in from the river, a prisoner, and wounded. Some accidental circumstances had attracted to him General Washington's special notice, who had him placed under the best medical and surgical care the army could afford, and ordered him to be lodged at his own quarters. There, according to custom, a large party of officers had assembled in the evening, to sup with the commander-in-chief. When the meats and cloth were removed, the unfailing nuts appeared, and the wine, a luxury seldom seen by American subalterns, except at "his excellency's" table, began to circulate. The general rose much before his usual hour, but, putting one of his aiddecamps in his place, requested his friends to remain, adding, in a gentle tone, "I have only to ask you to remember, in your sociality, that there is a wounded officer in the very next room."

This injunction had its effect for a short time, but, as the wine and punch passed round, the soldier's jest and mirth gradually broke forth, conversation warmed into argument, and, by-and-by, came a song. In the midst of all this, a side-door opened, and some one entered in silence and on tiptoe. It was the general. Without a word to any of the company, he passed silently along the table, with almost noiseless tread, to the opposite door, which he opened and closed after him as gently and cautiously as a nurse in the sick room of a tender and beloved patient. The song, the story, the merriment, died away at once. All were hushed. All felt the rebuke, and dropped off quietly, one by one, to their chambers or tents.

But the Newburgh Headquarters are also memorable as the scene of a far more important transaction. In the autumn of 1783, the war had closed with glory. The national independence had been won. The army, which had fought the battles, which had gone through the hardships and privations of that long, and doubtful, and bloody war without a murmur, were encamped on the banks of the Hudson, unpaid, almost unclothed, individually loaded with private debt, awaiting to be disbanded, and to return to the pursuits of civil life, without the prospect of any settlement of their long arrears of pay, and without the means of temporary support, until other prospects might open upon them in their new avocations.

It was under these circumstances, while Congress, from the impotence of our frame of government under the old confederation, and the extreme poverty of the country, found themselves utterly unable to advance even a single month's pay, and, as if loath to meet the question, seemed but to delay and procrastinate any decision upon it; the impatient and suffering soldiery, losing, as their military excitement died away with its cause, all feeling of loyalty towards their civil rulers, began to regard them as cold-hearted and ungrateful masters, who sought to avoid the scanty and stipulated payment of those services, the abundant fruits of which they had already reaped. Then it was that the celebrated anonymous Newburgh letters were circulated through the camp, touching, with powerful effect, upon every topick that could rouse the feelings of men suffering under the sense of wrong, and sensitive to every stain upon their honour. The glowing language of this address painted their country as trampling upon their rights, disdaining their cries, and insulting their distress. It spoke of farther acquiescence and submission to such injury and contumely, as exposing the high-spirited soldier to "the jest of tories and the scorn of whigs; the ridicule, and, what is worse, the pity of the world." Finally, the writer called upon his fellow-soldiers, never to sheath their swords until they had obtained full and ample justice, and pointed distinctly to their "illustrious leader," as the chief under whose auspices and directions they could most boldly claim, and most successfully compel, the unwilling justice of their country.

The power of this appeal did not consist merely in its animated and polished eloquence. It was far more powerful, and, therefore, more dangerous, because it came warm from the heart, and did but give bold utterance to the thoughts over which thousands had long brooded in silence. Precisely that state of feeling pervaded the whole army, that discontent towards their civil rulers, verging every hour more and more towards indignation and hatred, that despair of justice from any other means or quarter than themselves and their own good swords, that rallying of all their hopes and affections to their comrades in arms and their long-tried chief, such as in other times and countries, have again and again enthroned the successful military leader upon the ruins of the republick he had gloriously served.

The disinterested patriotism of Washington rejected the lure to his ambition; his firm and mild prudence repressed the discontents, and preserved the honour of the army, as well as the peace, and, probably, the future liberties of his country. It was the triumph of patriotick wisdom over the sense of injury, over misapplied genius and eloquence, over chivalrous, but ill-directed feeling. The opinions and the arguments of Washington, expressed in his orders, and in the address delivered by him to his officers, calmed the minds of the army, and brought them, at once, to a sense of submissive duty; not solely from the weight of moral truth and noble sentiment, great as that was, but because they came from a person whom the army had long been accustomed to love, to revere, and to obey; the purity of whose views, the soundness of whose judgment, and the sincerity of whose friendship, no man could dream of questioning.

Shortly after, the army disbanded itself. The veterans laid down their swords in peace, trusting to the faith and gratitude of their country, leaving the honour of the "Continental Army" unstained, and the holy cause of liberty unsullied by any one act of rebellious, or ambitious, or selfish insubordination. They fulfilled the prophetick language of their chief, when, in the closing words of his address on this memorable occasion, he expressed his sure confidence, that their patient virtue, rising superiour to the pressure of the most complicated sufferings, would enable "posterity to say, when speaking of the glorious example they had exhibited to mankind; had this day been wanting, the world had never seen the last stage of perfection to which human nature is capable of attaining."

Why should we dilate here on the particulars of this transaction? They form the brightest page in our history, the noblest theme of our orators; but no eloquence can increase the interest and dignity of the narrative, as told in the plain language of Marshall, and in the orders and address of Washington himself. Let it suffice for us to fulfil faithfully the humbler task of the local antiquary, which we have here undertaken to perform. When any of our readers visit this scene, they will feel grateful to us for informing them, that it was in the little north-eastern room of the "old stone house" at Newburgh, that Washington meditated on this momentous question, and prepared the general orders to the army, and the address, which he read, with such happy effect, to the military convention that assembled, at his invitation, on the fifteenth of October, 1783, at a large barrack or storehouse, then called "the new building," in the immediate neighbourhood.

It was but a few days after this, that, upon the lawn before the house, Washington finally parted with that portion of his army which did not accompany him to take possession of New York. He parted with his faithful comrades with a deep emotion, that contrasted strongly with the cold and calm serenity of manner which had distinguished him throughout the whole seven years of the war. That parting hour has often suggested itself to the writer, as affording one of the most splendid and abundant subjects that American history can furnish to the painter. It combines the richest materials of landscape, portrait, history, and invention, any of which might predominate, or all be united, as the peculiar talent or taste of the artist might dictate. It offers to the painter, magnificent and varied scenery, shipping, and river craft of the old times, with their white sails and picturesque outlines, arms, military costume, fine horses, beautiful women and children with every expression of conjugal and filial joy, mixed with the soldiers in groups such as art might dispose and contrast at its pleasure, numerous most interesting historical personages, and, above the whole, the lofty person and majestick presence of the chief himself, not the grave and venerable man we are accustomed to see in the fine portraits of Stuart, but still in the pride of manly and military grace and beauty, and melted into tenderness as he parts from the tried and loved companions of seven years of danger, hardship, and toil.

Ornaments and pride of American art; Allston, Trumbull, Vanderlyn, Dunlap, Cole, Sully, Morse, Inman, Weir; we commend this subject to your genius, to your patriotism!

It is a natural and good tendency of the human mind, and one leading to excellent ends, that prompts the man of taste or the scholar to

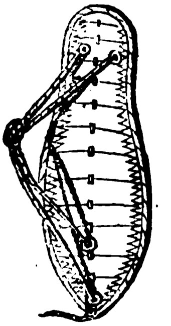
> "Worship the turf where Virgil trod,
> And think it like no other sod,
> And guard each leaf from Shakspeare's tree,
> With Druid-like idolatry."

But how much more elevated the feeling, how much worthier in the motive, and salutary in the influence, are the emotions that throb in the patriot's breast as he treads upon a soil, dignified by recollections of wisdom, of courage, of publick virtue, such as those we have now imperfectly described! If, therefore, to use the often-quoted, and deservedly often-quoted language of Johnson, "that man is little to be envied whose patriotism would not gain force upon the plains of Marathon, or whose piety would not grow warmer among the ruins of Iona:" what shall we say of the American who feels no glow of patriotism, who kindles not into warmer love for his country, and her glorious institutions, who rises into no grand and fervent aspiration for the virtue and the happiness of this people, when he enters the humble, but venerable walls, of the HEADQUARTERS AT NEWBURGH.—*Verplanck.*—*N. Y. Mirror.*

SHOES, AND THEIR VARIOUS FORMS.

The invention of this useful article of dress must necessarily be attributed to a very remote period in the history of the world, for as soon as mankind had made even a moderate progress in the arts of life, their attention would naturally be directed to the contrivance of some method for preserving the soles of the feet from injury. In preparing a covering for the head, the most delicate materials, such as straw, shavings of wood, &c., were in the first instance resorted to, the only object being to protect the head from the heat of the sun, and occasionally from rain; but any substance calculated to guard the feet from injury, must be capable of enduring much wear and tear. On this account it is, that the earliest coverings for the feet, of which any traces exist, were formed of leather.

No. 1.



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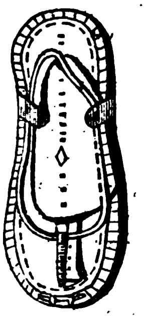

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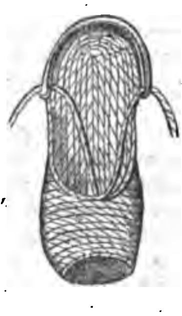
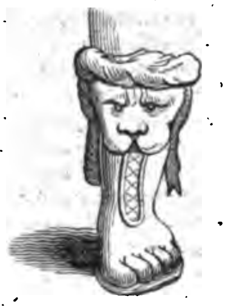


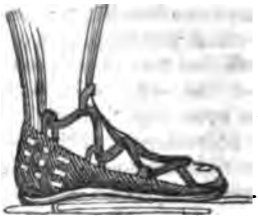
The first three engravings represent shoes, or rather sandals, (for the covering of the upper part of the foot is a much later invention,) of Egyptian manufacture, and show the high state of civilization in Egypt nearly three thousand years ago.

The sandals of the Greeks are the next we have to notice, and in these, the upper part of the foot is still left uncovered, although, perhaps, greater dexterity is exhibited in the different methods of fastening them on the feet. Much uncertainty, however, exists, as to the correct forms of the sandals of this celebrated nation, as most of the statues which have been preserved are greatly damaged, and the feet have been restored by modern artists: in addition to this, the greater number of the statues of their heroes or gods, are represented with their bare feet. The form of the coverings for the feet of the ancient Romans is evidently derived from the Greeks, but they assumed a greater variety of shapes; in general, however, the upper part of the foot was either wholly or partially covered. The engraving, No. 4, represents what may perhaps be most appropriately called a boot.

No. 4.

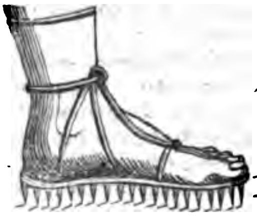


No. 5.

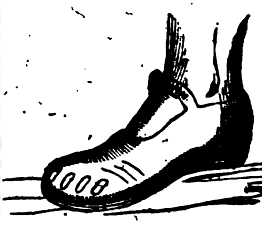


The four next engravings (Nos. 6, 7, 8, 9,) are representations of ancient shoes and sandals, of *different* kinds. The first, with spikes attached to the sole, is, evidently, intended for the purpose of rendering the wearer sure-footed, in ascending or descending steep acclivities, or in crossing plains of ice, or frozen snow. The next is almost a perfect

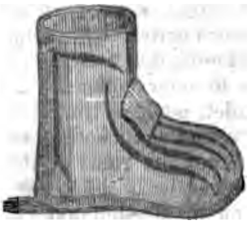
No. 6.



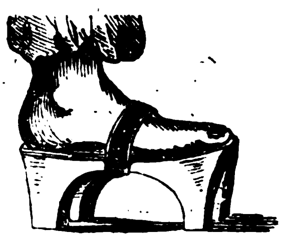
No. 7.



No. 8.



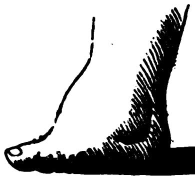
No. 9.



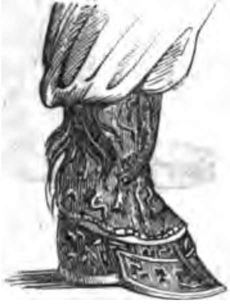
shoe, but to what nation it belonged is uncertain. The third is a species of wooden clog, and is almost similar to those worn at the present day by the ladies of Syria. The fourth appears to be formed of leather; it is copied from an ancient fragment, but it is uncertain to what country it is to be attributed.

Referring to the shoes of modern nations, the first, and perhaps the most antique, are those worn by the Chinese. Like every other article of dress of this singular people, the shoes of the richer classes are chiefly formed of silk, and beautifully embroidered. Nos. 10 and 11 represent the foot and shoe of a Chinese lady of rank, which, from its extremely small size, was, no doubt, of the most fashionable form.

No. 10.



No. 11.



This strange desire of the Chinese females of all ranks, to reduce the size of their feet, is only another proof of the inconveniences and torments which have been endured for fashion's sake; and, although at first sight it appears extremely singular, it is not a whit more unnatural than the tight lacing of the ladies of the present age. To such an extent is this practice carried, that, says Lord Macartney, "Even among the middle and inferiour classes, the feet were unnaturally small, or rather truncated. They appeared as if the fore-part of the foot had been accidentally cut off, leaving the remainder of the usual size, and bandaged like the stump of an amputated limb; they undergo, indeed, much torment, and cripple themselves in a great measure, in imitation of ladies of higher rank, among whom it is the custom to stop, by pressure, the growth of the ancle, as well as the foot, from the earliest infancy; and leaving the great toe in its natural position, forcibly to bend the others, and retain them under the foot, till at length they adhere to it, as if buried in the sole, and can no more be separated. Notwithstanding the pliability of the human frame in tender years, its tendency to expansion at that period, must, whenever it is counteracted, occasion great pain to those who are so treated; and before the ambition of being admired takes possession of these victims of fashion, it requires the vigilance of their female parents to prevent their relieving themselves from the firm and tight compresses which bind their feet and ancles. When these compresses are constantly and carefully kept on, the feet are symmetrically small. The young creatures are, indeed, obliged for a considerable time, to be supported when they attempt to walk; but even afterwards they totter, and always walk upon their heels. Some of the very lowest classes of the Chinese, of a race confined chiefly to the mountains, and remote places, have not adopted this unnatural custom. But the females of this class are held by the rest in the utmost degree of contempt, and are employed only in the most menial domestick offices.

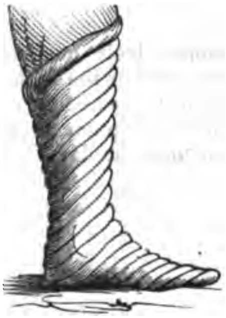
"So inveterate is the custom which gives pre eminence to mutilated over perfect limbs, that the interpreter averred, and every subsequent information confirmed the assertion, that if of two sisters, otherwise every way equal, the one had been thus maimed, while nature had been suffered to make its usual progress in the other, the latter would be considered as in an abject state, unworthy of associating with the rest of the family, and doomed to perpetual obscurity, and the drudgery of servitude."

How this singular fashion arose, is uncertain; the common story in China is, that a certain lady of very high rank, happened to be gifted by nature with extremely small feet, and, no doubt, took good care that her advantage over the rest of her sex, should not be unknown; this naturally excited the emulation of others, and an endeavour was made to supply by art, that which was considered a deficiency on the part of nature.

This curious covering for the leg and foot (No. 12,) was in use among the Anglo-Saxons, it was employed chiefly by the higher classes, and by the clergy in general; a shoe was also worn along with it. These leg bandages, or garters, were at times very richly embroidered, and sometimes instead of being rolled one way, as in our engraving, they were employed and bound round contrary ways, so that, when they were of two colours, the appearance resembled a Highland stocking; this was called cross-gartering.

The shoes of the Anglo-Saxons were very simple, but, at the same time, well contrived for comfort; they were usually tied at the instep by a leather thong.

No. 12.



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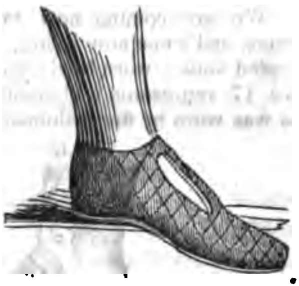
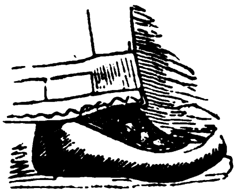


No. 14.

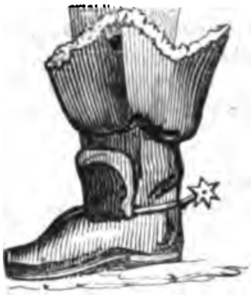


After the time of the Anglo-Saxons, when the nation began to import its fashions from other countries, the form of the boots and shoes was constantly varying, indeed, they appear to have been made rather according to the whim or caprice of the wearer, than in consequence of any settled fashion; we must not, however, omit to notice the long-toed boot (No. 15,) so much worn in the reign of Richard the Second. It is said by historians that these were so inconvenient in walking that the wearer was obliged to loop them up to the knee by means of metal chains; it is also said that once on the field of battle, the young cavaliers were so encumbered by these unnaturally long toes, that they were obliged to cut them off in the heat of the conflict.

No. 15.

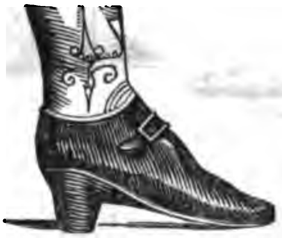
In the seventeenth century, the boots of gentlemen were ornamented with tops, sometimes elegantly fringed with lace, and the shoes also had immensely large rosettes of different-coloured silks.

No. 16.



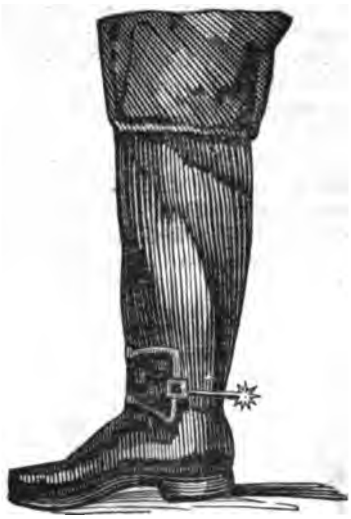
We are coming now to comparatively modern times, and some now living can remember the high-heeled shoes worn by the ladies in the last century. No. 17 represents a shoe of this description, such as was worn by the fashionable men of the day.

No. 17.

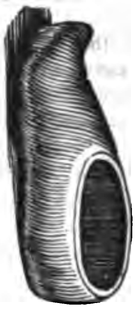


The shoe and boot represented in Nos. 18, 19, are still worn in France: the jack-boot has been so often noticed by travellers and others, that it hardly needs description; it is, however, perhaps, not generally known, that the foot of the wearer of this unwieldly boot does not reach the sole, but is received in a space about four inches above the ground, so that the heel of the wearer is immediately in front of the spur. The wooden shoe is formed out of one solid piece of wood, and is worn in France chiefly by the children and women in country places. It is the wooden shoe alluded to by Goldsmith's porter in the *Citizen of the World*, who, while resting from his load, declares the French to be only "fit to carry burdens, because they are slaves and wear wooden shoes."

No. 18.

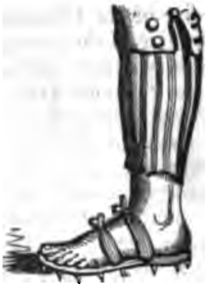


No. 19.



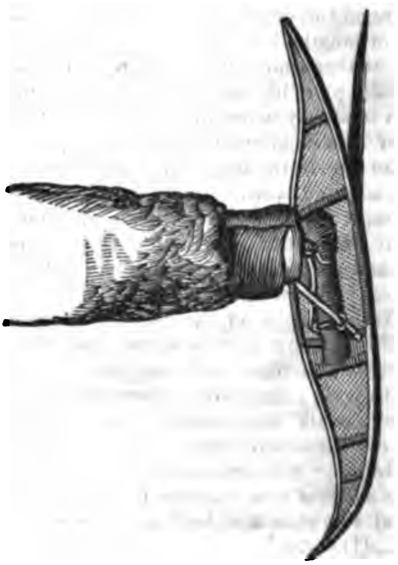
No. 20 is a kind of sandal worn by the mountaineers in Switzerland, studden with iron spikes, to prevent the foot slipping.

No. 20.



The snow-shoe is formed of a frame-work of wood, strongly interlaced with thongs of leather; it is employed by the Esquimaux and the Canadians, to prevent their sinking into the snow, when crossing their extensive plains. This shoe causes great pain to the wearer until after considerable practice in the use of it.

No. 21.



We cannot better conclude this account, than by noticing the machines invented by Mr. Brunel for the purpose of making shoes for the army and navy. The chief difference between his method and that in common use, consisted in the employment of nails of different lengths, for the purpose of uniting the various parts of the shoe, the only part subjected to the operation of sewing being the three pieces of which the upper-leather is composed, namely, the *vamp* and the two *quarters*. The cutting-out is performed by large steel punches of the proper form; the holes to receive the nails are made with the greatest regularity, and by a very simple contrivance: the nails, which are also made by the same machine, are dropped with unerring certainty in their places, and at one blow they are all driven in to the proper depth.

The nails employed are of three kinds: 1. The *long nails*, which form a complete row, as near as possible to the edge of the whole shoe, passing through the two soles, the welt, and the upper-leather; the heel is also fastened on by a row of these nails, round its edge. The heads, or thick ends of the nails, are seen on the lower side of the soles, and keep the leather from wearing.

2. The *tacking nails*, which are of such a size as to pass only through the *sole* and the *welt*. Of these there is a row all round the edge of the foot, but further from the edge than the row of long nails.

3. The *short nails*, which only penetrate through the thickness of the lower sole; they are disposed in parallel rows across the tread of the foot, and also in a double row parallel to the outline of the toe, at about three quarters of an inch from the edge.

CHINESE PUNISHMENTS, No. 7.

PUNISHING A BOATMAN.

A species of correction appointed for boatmen, or, as they are termed in England, watermen. Having been convicted of some misbehaviour, he is compelled to kneel: one of the officers of justice prevents him from flinching, whilst another grasps his hair, and bestows a certain number of blows upon each side of his face, with a sort of double battledore, made of thick leather.

JOICE HETH, Aged 161.

We visited this curious living relick of antiquity, about the middle of August, at Niblo's. From records, the authenticity of which we have no reason to doubt, Joice Heth was born in the island of Madagascar, on the southeastern coast of Africa, in the year 1673. She was brought to this country, in a slave ship, doubtless, at the age of fifteen years. She was held as a slave in the State of Virginia, subsequently, but we cannot trace her history until we find her in the possession of Augustine Washington, the father of General Washington. She became a member of the Baptist church while in his possession, and was baptized in the Potomac river, about the year 1719, or 116 years ago. The disposition he made of her, and her age at the time, appears in the following bill of sale:—

"Know all men by these presents that I Augustin Washington of the county of Westmoreland and state of Virginia for and in concideration of the sum of thirty three pounds lawfull money of Virginia to me in my hand paid the Receipt of which is hearby acknowledgd have bargained sold and delivered and by these presents do bargin sell and deliver to Elizabeth Atwood one negrow woman named Joice Heth aged fifty four years to have and to hold the Said Joice Heth unto the said Elizabeth Atwood her executors administrators and assigns to her and to her proper use benefit and behoof for Ever and I the said Augustin Washington my heirs Executors and Administrators the said bargaind Bargined negrow with unto the Said Elizabeth Atwood her Executors Administrators and Assigns from against all person or persons whomsoever shall and will warrant and for Ever defend by these presents in witness whereof I have hereunto Set my hand and Seal this the fifth day of Febuary one thousand seven hundred and twenty seven.

A. Washington. [Seal.]
Sealed and delivered in presents of
Richard Buckner.
William Washington."

Joice insists that she is the same person mentioned in this instrument, and claims to have been the first nurse of George Washington, who was born five years after, viz., 1732. Elizabeth Atwood, it is understood, was a member of the Washington family, so that the apparent inconsistency in this portion of Joice's statement disappears. She relates some few facts connected with the birth and childhood of General Washington, as the cutting of the cherry-tree, wherein his honesty saved him a flogging, &c., but her memory is very faint and indistinct. The "red coats," however, seem to have made a very vivid and lasting impression upon her mind, and she still appears to harbour an inveterate antipathy towards them. But as to all subsequent events, her memory seems to be almost *tabula rasa*. She does, indeed, recollect, that when George Washington was considerably advanced in boyhood, he left his paternal roof, and that she, a short time afterwards, was sent into Kentucky; but her history since that period seems involved in the darkest obscurity. It will be recollected that in his eighteenth year, George Washington was appointed surveyor, by Lord Fairfax, and this event which called him away from home, may be the period to which she refers. Joice recollects nothing more of George Washington! She knows not that the infant boy she nursed, had no sooner grown to manhood, than he became the "first in war, first in peace, and the first in the hearts of his countrymen"—she remembers not that he died the adoration of his country, and claimed by the whole world as the boon of providence to the human race!

About the year 1760, or seventy-five years ago, it appears, Joice became totally blind and very infirm. By about the year 1810, her infirmity increased upon her so much, that she was obliged to take to her bed, upon which, it appears, she has lain ever since. Last winter, a gentleman was passing through Paris, in the state of Kentucky, and accidentally heard that a woman was living in an obscure place in that town, who was reputed to be 161 years old. He felt curiosity enough to seek her out, and the result has been, that "old aunt Joice" is no longer hid in a corner, but carried about on a litter, a publick exhibition, to gratify the acquisitiveness of some, and the curiosity of all. Two certificates accompany her, one by Hezekiah Buckner, aged 67, and the other by Benjamin A. Leland, aged 71, both residents of Paris; they state, in substance, that from their earliest days they have known the coloured woman now exhibiting—that they have no doubt that 161 is her correct age—that as early as they can remember she was totally blind from age, and too infirm to labour—that she has been celebrated for her piety and belief, that no reward or threat could induce her to tell a falsehood, &c.

At the present period she weighs but forty-six pounds, is very much emaciated, and bears every mark of extreme old age. Her eyes are closed and deeply sunk in their sockets; the skin is closely drawn over the bones; one front tooth is preserved; her hair is gray; her hands, with the nails grown to nearly an inch in length, resemble the claws of a bird; one arm is crippled, the hand is closed, and the nails have partly grown into the flesh; her feet are but skin and bone, with nails about an inch long; the nails of her great toes, resemble blue horn, and are about half an inch in thickness; when asleep, her face more nearly resembles an Egyptian mummy than any thing alive. Her conversation is generally confined to answering questions, and her voice is little louder than a whisper, She occasionally laughs; sings one or two hymns, but is very easily fatigued. Food is administered to her regularly three times a day, with a little whiskey; but evacuations occur but once in a fortnight! She is an inveterate smoker.

With all the evidence before us, we can but look upon the life of Joice Heth, as a wonderful instance of longevity; as an extraordinary exception, wherein we behold the existence of this frail mechanism of human form prolonged to more than eighty years beyond the grand climacterick of human life! Born in 1673, what vast and important events are comprised in the period of her history! Some of the greatest changes, the most important revolutions in empires and states, the most wonderful discoveries and all their most valuable improvements in art, in science, in government, may be found to have burst upon the world since the period of the birth of Joice Heth! It was but about fifty years before her birth that the Pilgrims landed at Plymouth—at the day of her birth Plymouth and New Haven colonies, the settlement of the Dutch at New York, and the settlement at Jamestown, were the principal settlements in this country!—in fact, the region beyond the Mississippi was entirely unexplored, and Louisiana, as well as the northwest territory, Kamtschatha, and the islands of the South Pacifick, were unknown to European nations. When the *father* of the United States was born, Joice Heth was fifty-nine years old—since which time we have fought our battles of independence, established our government, and peopled our country with twelve millions of freemen. In her youthful days, history informs us, people were wont to travel on foot or with horses; now, with the speed of the wind, steam propels us over land and water, and balloons transport us through the air! Indeed, it is not extravagant to believe, that the time is close at hand, when the period comprised in the first 100 years of Joice Heth's life, will be linked on to the *dark ages!*

We know of but three instances since Methusaleh's time, where the extraordinary age of this individual has been exceeded. The first was a woman by the name of Sarah Brookman, who died in England in 1776, at the age of 166. The second was Henry Jenkins, who died at the age of 169. The third is now living in Russia, at an age about equalling the last. There is also now living near Buffalo, in this state, an old chief of the Seneca tribe of Indians, whom the tradition of the tribe, reputes to be about 150 years old. It is said he is a small, withered and shrivelled specimen of human nature, but is remarkably quick in his movements, swift of foot, and possesses a keen, hawk eye, and all his faculties in perfection.

HALLEY'S COMET.

The astronomers, inform us that the comet of Halley is now making its way in its elliptical orbit towards the sun and the earth. It will be nearest to the earth about the 5th or 6th of October, and in its perihelion, or nearest point to the sun, about the 4th of November. Its revolution is about seventy-six years, and was last seen in 1759. When the comet is nearest the sun, it will be about an equal distance with Venus from that luminary—and when at its greatest distance from the sun it will be almost twice as far off as Georgium Sidus.

If we mistake not, this is the same comet that appeared in 1456, spreading terrour throughout the civilized world, and exciting a belief, general among all classes, that the world was about to be destroyed, and that the day of judgment was at hand! Indeed, so great was the general alarm, that the comet was *excommunicated* three times a day during its appearance in the heavens, by the Church of Rome! At this time the Turks were extending their victorious arms across the Hellespont, and threatening to overrun all Europe. This added not a little to the universal dismay. "Under all these impressions," we are informed, "the people seemed regardless of the present and anxious only for the future. The Romish Church at this time held unbounded sway over the lives, and fortunes, and consciences of men. To prepare the world for its expected doom, Pope Calixtus III. ordered the Ave Maria to be repeated three times a day instead of two. He also ordered the church bells to be rung at noon, which was the origin of that practice, so universal in Christian churches. To the Ave Maria the prayer was added—'Lord save us from the devil, the Turk, and the comet:' and once each day, these three obnoxious personages suffered a regular excommunication.

"The Pope and clergy exhibiting such fear, it is not a matter of wonder, that it became the ruling passion of the multitude. The churches and convents were crowded for confession of sins; and treasures uncounted were poured into the apostolick chamber.

"The comet after suffering some months of daily cursing, and excommunication, began to show signs of retreat, and soon disappeared from those eyes in which it found no favour. Joy and tranquillity soon returned to the faithful subjects of the Pope, but not so with their money, and their lands. The people, however, became satisfied that their lives, and the safety of the world, had been cheaply purchased. The Pope, who had achieved so signal a victory over the monster of the sky, had checked the progress of the Turk, and kept, for the present, his Satanick Majesty at a safe distance—while the Church of Rome, retaining her unbounded wealth, was enabled to continue that influence over her followers, which she retains, in part, to this day."

This comet appeared again in the years 1531, 1607, 1682 and 1759, and is now approaching the sun with accelerated velocity, and will pass its perihelion the first week in November.

To speculate a little—suppose this comet should strike the earth on the western side of our meridian? the consequence would seem to be that old Terra would be set whirling in the contrary direction, namely, from east to west. If it should strike us north of the equator, should we not have a rapid revolution from south to north, and therefore two revolutions at right angles to each other? Again, suppose it should only come near enough to tear us from our station in the system and draw us in the fiery train of its own orbit? If we could withstand the scorching, what wonders would be unfolded to us in the companionship of a comet in its almost centennial pilgrimage through the unexplored heavens! But its dangerous approximation to the earth need be but little feared or expected. At the nearest point of its approach, it will be about twenty-two millions of miles distant from the earth. Indeed, its periodical return may now be safely predicted, since it has been almost conclusively proved to be composed of matter, and to obey, like the planets, the laws of gravitation.

The brilliancy of this comet will be the brightest when nearest the earth, and for a few days afterwards; and then having a north declination of upwards of fifty degrees, it will, in the northern states, be in the circle of perpetual apparition, like the north stars, and consequently will then appear to revolve around the pole without descending below the horizon. It is expected to be visible from the earth during part of the time, viz., from the first to the tenth of October, and its apparent motion in right ascension and declination will not be less than that of the moon.

The elements in relation to the appearance of this comet have been determined with great care and labour by three of the first mathematicians in Europe. We subjoin the results of the calculations of M. Damoiseau :—

Passage of the Perihelion, 1835, Nov. 4. 32, Paris mean time from midnight.

Place of the Perihelion *on the orbit* -	304°	27′	24″
Longitude of the ascending node -	55	9	7
Inclination of the orbit - - - -	17	41	5
Ratio of the eccentricity to the semi-axis major - - - - -	0.9673055		
Semi-axis major - - - - -	17.9852		

Motion retrogade.

The comet will probably not be visible without the aid of glasses. It is called Halley's comet, because its period of revolution was calculated by the celebrated astronomer Edmund Halley, in 1682. Sir Isaac Newton, who was contemporary with Halley, observed in his last illness, "that the elliptical figure of the orbits of comets led him to think that they might naturally fall into the sun; and that *perhaps* the comet of Halley, after several more revolutions, would be drawn into that luminary; which would so increase its heat, as to produce disastrous consequences to some of the planets of the system."

EPITHALAMIUM.

BY J. G. BRAINARD.

I saw two clouds at morning,
Tinged with the rising sun,
And in the dawn they floated on
And mingled into one:
I thought that morning cloud was blest,
It moved so sweetly to the West.

I saw two summer currents
Flow softly to their meeting,
And join their course in silent force,
In peace each other greeting:
Calm was the scene, through banks of green,
While dimpling eddies played between.

Such be your gentle motion,
'Till life's last pulse shall beat,
Like summer's beam, and summer's stream,
Flow on in joy to meet
A purer sky, where troubles cease,
A calmer sea, where all is peace.

THE BIBLE.

Bible History ceases 340 years before Christ. Septuagint version made 284; first divided into chapters, 1253. The first English edition was in 1536; the first authorized edition in England was in 1539; the second translation was ordered to be read in churches, 1549; the present translation finished, September, 1611; permitted by the pope to be translated into all the languages of the Catholick states, February 28, 1759; the following is a dissection of the Old and New Testaments :—

	In the Old Testament.	*In the New.*	*Total.*
Books	39	27	66
Chapters	929	260	1,189
Verses	23,214	7,959	31,173
Words	592,493	181,253	773,746
Letters	2,728,100	838,380	3,566,480

The Apocrypha has 183 chapters, 6081 verses, and 125,185 words. The middle chapter, and the least in the Bible, is the 117th Psalm; the middle verse is the 8th of 118th Psalm; the middle line is the 2d book of the Chronicles, 4th chapter, and 16th verse; the word *and* occurs in the Old Testament 35,535 times; the same word in the New Testament occurs 10,684 times; the word *Jehovah* occurs 6,855 times.

Old Testament. The middle book is Proverbs, the middle chapter is the 29th of Job; the middle verse is in the 2d book of Chronicles, 20th chapter, and 18th verse; the least verse is the 1st book of Chronicles, 1st chapter, and 1st verse.

New Testament. The middle is the Thessalonians, 2d; the middle chapter is between the 13th and 14th of the Romans; the middle verse is the 17th of the 17th chapter of the Acts; the least verse is the 35th verse of the 11th chapter of the Gospel by St. John.

The 21st verse of the 7th chapter of Ezra has all the letters of the alphabet in it.

The 19th chapter of the 2d book of Kings, and the 37th chapter of Isaiah, are alike.

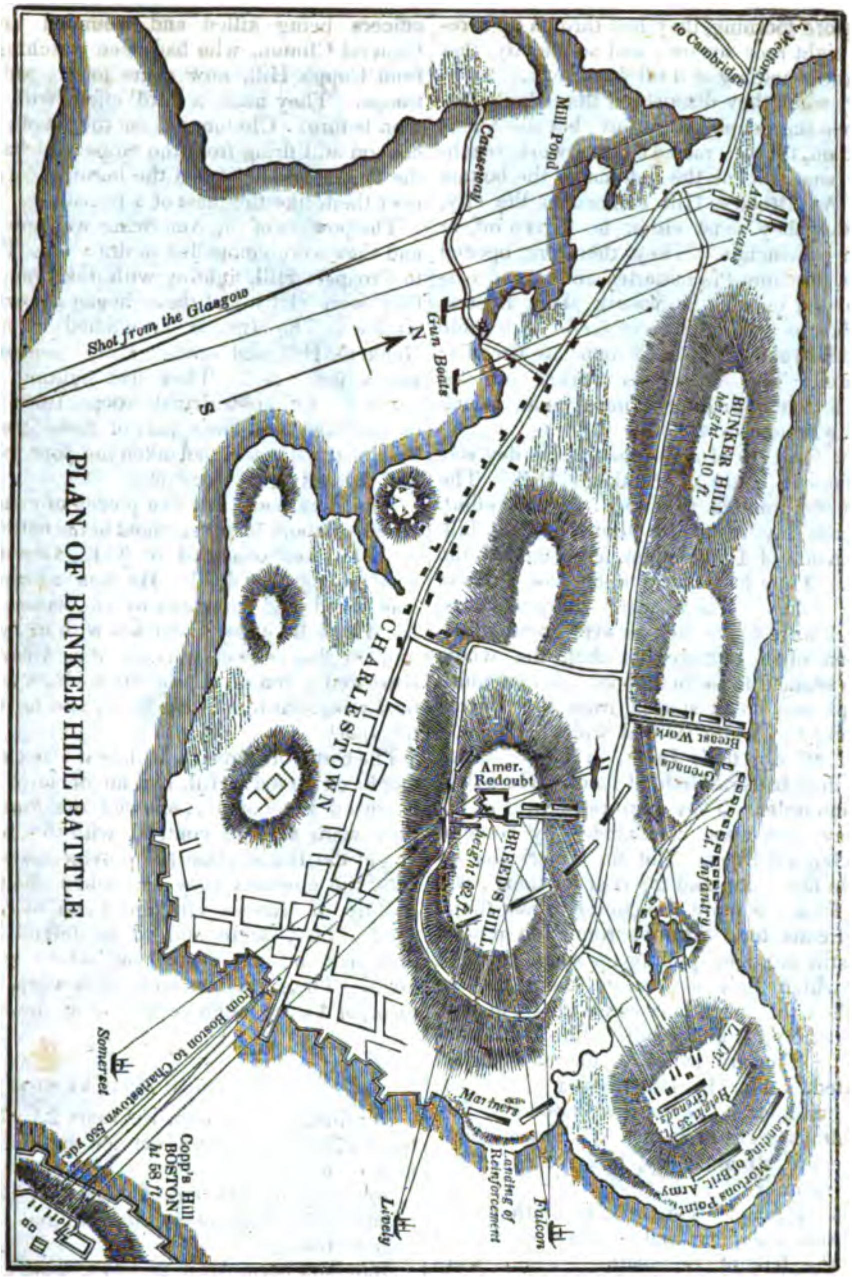
The book of Esther has 10 chapters, but neither the words Lord nor God in it.

The following is a chronological list of different versions and editions of the Scriptures :—First translated into the Saxon language 939. Hebrew—first printed Hebrew Bible done at Soncinum in Italy, at Naples, 1487; complete of the whole Bible, at Soncinum, 1488; at Venice, by Bomberg, 1518—and at the same epoch in Spain, under Cardinal Ximenes; in 1526–28, the first edition of B. Chaim; Basil, 1534; in 1549, by B. Chaim; in 1572, the Royal or Spanish Polyglott, 8 vols. at Antwerp; third edition of B. Chaim's Bible, 1618; in 1623, at Venice; Amsterdam, 1724–27; Paris 1641, 10 folio vols Polyglott; London Polyglott, 1757.

SONNET—DAWN.

I see the light, I taste the flowing air—
There is no cloud above me—and I feel,
Bathing my forehead, delicate and rare,
And full of odour, the sweet influence steal.
The tints of dawn the last fair star conceal,
Throwing faint crimson o'er its lessening ray;
And the far billowy vapours melt away,
Touched by thy golden wand—imperial Sun!—
Rising in glorious beauty, giving life
To the young flowers, and joy to every one—
Whose early-wafted thoughts to Heaven are rife
With deep devotion buried at thy shrine.
Well might the ancient world deem thee divine,
And the first worship of the soul be thine!

New England Magazine.



REVOLUTIONARY BATTLES ILLUSTRATED. No. 4.

BATTLE OF BUNKER'S HILL.

Early in 1775 after the battles of Lexington and Concord, affairs in this country were every where ripening for the general war. The citizens of New England, New Jersey, Virginia, and the Carolinas, were actively engaged in preparations of defence. The troops of New York and New Hampshire were also employed in fighting the enemy at Crown Point and Ticonderoga. It was at this crisis that the skirmishes between the English and the provincials at Boston, resulted in a most obstinate battle. There were some islands in Boston harbour, where the English found forage for their horses and cattle.

The Americans undertook to carry off these cattle from Noddle's Island and Hog Island, and succeeded, after some fighting. They scoured Pettick's Island and Deer Island, soon after, in the same way. The English were put to a good deal of trouble to get food.

They were finally so much pressed by the American army, that General Gage found himself obliged to make a new effort against them. The provincials had sent 1,000 men, under Colonel Prescott, to fortify Bunker's Hill, in Charlestown. Instead of doing so, however, by some mistake, he fortified Breed's Hill, which is nearer the city. The Americans took possession of it in the evening, and worked so well, that, before morning, they had thrown up a redoubt about eight rods square; and so silently, that the British knew nothing of it till day-break.

The latter, when they discovered the redoubt, began firing upon the people in the fort; but the Americans worked on, till they raised a breastwork, reaching from the east side of the redoubt to the bottom of the hill. As Breed's Hill commands the city, the British saw they must either be driven off, or drive off the provincials. They, therefore, opened a tremendous fire from the batteries and armed vessels, that floated on all the waters about Boston. Showers of bombs and balls were fired. A terrible battery was raised upon Copp's Hill, opposite Breed's; but all in vain. The Americans worked on, and had finished a trench, or ditch before noon, which reached to the bottom of the hill.

It was now the 17th of June, and on this day was fought the famous battle of Bunker's Hill. The British were determined to make a great effort. The provincials lay ready for them on the hill. General Putnam, of Connecticut, commanded the whole force. They had muskets, but few of them bayonets or rifles. They were sharp-shooters, however, and were brave men as ever breathed.

About noon of a terribly hot day, the whole British camp seemed to be in motion. A vast multitude of sloops and boats started from the Boston shore, covering the water far and wide. The soldiers landed at Moreton's Point, in Charlestown, protected by their batteries behind them. Here they paraded in fine order. They were the flower of the English army, and were commanded by General Howe and General Pigot. But the Americans appeared a little too strong and too cool for them; and they waited for a few more companies to join them.

The Americans took this opportunity to protect themselves still more, by pulling up some post and rail fences, which they set before them, in two rows, and filled the space between with fresh hay, which they gathered from the hill. The British began to march. The militia left to defend Charlestown, retreated. The British entered it, and set fire to the buildings. In a few moments, 500 wooden buildings were in flames. The wind blew high, and the fire streamed up, and roared in the most terrible manner.

Thousands of people were gazing at the scene from the Boston steeples, and waiting with great anxiety for the fate of the battle. There were multitudes also, on all the high roofs and hills round about. Never was there such a bustle and stir. The English marched slowly towards the redoubt, halting now and then, for the cannon to come up and fire. They came, at last, within musket-shot; and the redoubt, which had been as still as the grave till this moment, blazed all at once, with a tremendous volley.

The British were soon thinned off, and compelled to retreat. Many fled for their lives, and threw themselves into the boats. The green field of battle was covered with dead bodies. The officers ran hither and thither, to rally the troops; and after some time, persuaded them to march forward again. The Americans waited for them quietly, and received them once more with a flood of balls. The British fled down the hill to the shore.

General Howe was alone upon the field; all his officers being killed and wounded around him. General Clinton, who had been watching the battle from Copp's Hill, now came to his aid with new troops. They made a third effort, with more spirit than before. Clinton led on the whole body; the cannon still firing from the ships and batteries, and the flames and smoke of the burning town sweeping over them like the blast of a furnace.

The powder of the Americans was now exhausted, and they were compelled to draw off. They retired to Prospect Hill, fighting with their muskets as if they were clubs, and there began throwing up new works. The British intrenched themselves on Bunker's Hill, and neither army seemed willing to attack the other. They had fighting enough for one day. Of 3,000 British troops, 1,054 were killed or wounded. A large part of these were officers. The sharp-shooters had taken the poor fellows down like so many gray squirrels.

The Americans lost five pieces of cannon. Their killed, of about 1,500 engaged in the battle, amounted to 134; their wounded to 314. General Warren was among the dead. He was a brave man, and was loved and lamented by all classes of people. An English officer, who knew him by sight, saw him in the retreat, rallying the Americans. He borrowed a gun of one of his soldiers, and taking a fatal aim, shot him in the head, and he fell dead on the spot.

The battle of Bunker's Hill, as it was called, though fought on Breed's Hill, had no decisive effect; yet it roused the country, showed the Americans that they were able to contend with the regulars, and taught the British, that the provincials were not exactly the cowards they had taken them for. The capture of Breed's Hill did them more hurt than good. They were obliged to defend it now, and they had not too many men before to defend the town. Their soldiers were also worn out with fatigue, and were much depressed by the hot weather.

CURIOUS COINCIDENCE.

Washington was born February 22, 1732, inaugurated 1789; his term of service expired in the 66th year of his age.

John Adams was born October 19, 1735, inaugurated 1797; term of service expired in the 66th year of his age.

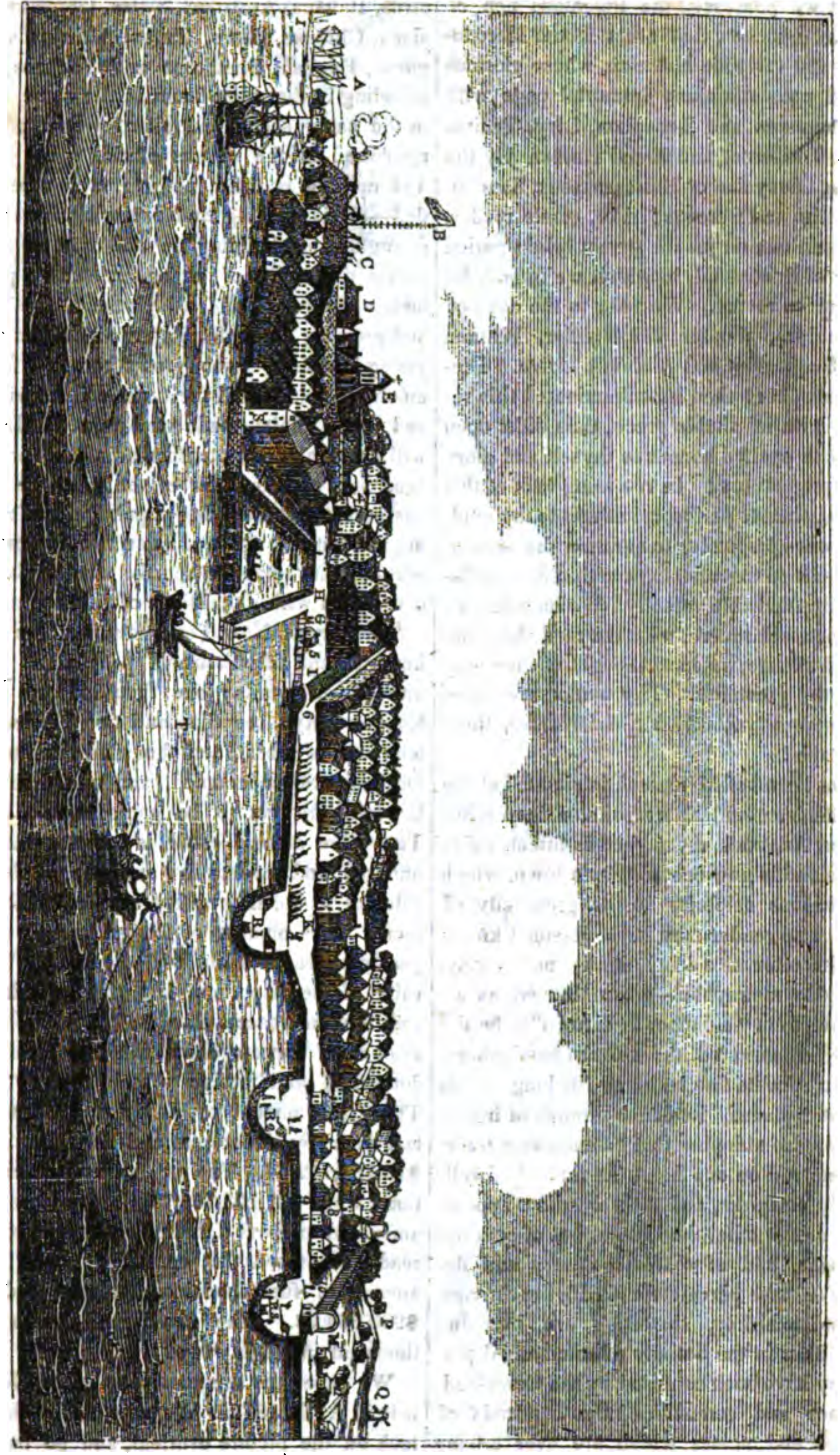
Jefferson born April 2, 1743, inaugurated 1801; term of service expired in the 66th year of his age.

Madison born March 5, 1751, inaugurated 1809; term of service expired in the 66th year of his age.

Monroe born April 2, 1759, inaugurated 1817; term of service expired in the 66th year of his age.

The above is a list of five of the Presidents of the United States, (all men of the Revolution,) who ended their term of service in the 66th year of their age!

A Significant Reply. "Thomas," said a sponging friend of the family to the footman, who had been lingering about the room for half an hour to show him to the door; "Thomas, my good fellow, it's getting late, isn't it? How soon will the dinner come up, Thomas?" "The very moment you be gone, sir," was the unequivocal reply.



NEW YORK AS IT WAS IN 1673.

THE CITY OF NEW YORK IN 1673.

Would that we possessed the ingenious pen of Diedrich Knickerbocker, that great Dutch Herodotus, that lofty and veritable historian, whose glorious name shineth upon the same immortal page with those of Thucydides and Xenophon, Livy, Tacitus and Polybius, Diodorus, and Aboul Hassan Aly the son of Alkhan, Dionysius of Halicarnassus, Sanchoniathon, Manetho and Berosus! For, gentle reader, none but his pen can do justice to that bright period in the history of this island, to which we intend, for a few moments to revert. We refer to the days of those redoubtables, Wouter Van Twiller, William Kieft, Peter Stuyvesant and Anthonio Colve. Diedrich Knickerbocker! thou hast illuminated this remarkable era with inimitable grace, thou didst open this history with exalted honour to thyself and glory to thy noble progenitors! In returning to it at this distant and degenerate period, we submit to thy guidance, not for once presuming to question the authenticity of thy learned statements, nor thinking to distrust thine unimpeachable veracity. We have known thee only to love and revere, we have read thee only to believe and admire, we have thought of thee only to wonder at thy greatness. Thy works are thine enduring monument; *Diedrich Knickerbocker*, thine immortal epitaph!

The ancient island of Manhattan is situated at the junction of Hudson and East rivers, sixteen miles from the great Atlantick ocean, and is fifteen miles long. This island is now occupied by a town, which enjoys a notorious celebrity as the great city of New York. The reader may have personal knowledge of its character, as a dusty, smoky, noisy, busy, great and mighty metropolis—grown indeed, as we intend to show, from " a dapper little town" to be the acknowledged emporium of the western hemisphere. You may have seen its fine buildings, its long streets and handsome " places," its dense throngs of inhabitants, its immense shipping and its enormous trade. You have observed on one hand the princely dwelling, the costly equipage, and the splendid " appearances ;" and on the other the squalid hut of poverty, of filth, of vice, and of extreme misery and degradation. You have perceived the eddying throngs, gathering and whirling, scattering and hurrying hither and thither in the activity of commercial pursuits, and may have been confused by the never-ending turbulence and commotion, the hundreds of mingled notes and noises which are ever arising from the multifarious trades and occupations of nearly two hundred and fifty thousand inhabitants. As you have mingled in the crowds of people, you may sometimes have been at a loss to determine the identity of the town, and have stopped to question whether you were in an oriental, an European, or an American city. You may meet Frenchmen, Spaniards, Italians, Austrians, Swiss, Germans and Russians, Chinese, Jews, Turks, Africans and Portuguese, English, Southrons and Yankees, all commingling in the same hour, in the same street, and in the same scene, and all of whom perhaps are numbered in the census of this great metropolis Yet nothing is fixed, nothing is permanently settled—all is moving and removing, organizing and disorganizing, building up and tearing down—the ever-active spirit of change seems to pervade all bodies, all things, and all places. The expanding and growing town forcibly reminds you of a burly young landlady, " who grows too fast for her garments, in spite of all the tucks and drawing-strings, and broad plaits, made ' to let out.' " Indeed, you will observe, that notwithstanding the present vastness and populousness of the city, the extending business, the multiplying population and the pervading and untiring spirit of enterprise, indicate that the period is not remote when the whole island will be overgrown with its millions of inhabitants..

The city of New York now numbers about two hundred and fifty thousand people. It is divided into fifteen wards; one thousand and fifty-seven blocks; forty-three thousand two hundred and sixteen lots, of which ten thousand six hundred and fourteen are unoccupied, and one thousand eight hundred are yet to be gained out of the rivers. The value of real estate is computed at about one hundred and twenty-five millions of dollars; the value of personal property at about sixty-five millions. The number of foreign vessels which now yearly arrive is about two thousand. The whole value of the imports of last year in both American and foreign vessels was $76,876,496. The total amount of exports domestick and foreign in both domestick and foreign vessels was $22,196,068. The total amount of duties secured at this port last year by American and foreign vessels was $10,183,152.64. The expenses of the city corporation were $1,103,180.72. The losses by fire amounted to about a million and a half, and have already surpassed that sum this year. The total amount of fuel inspected for sale and use, was $930,504.03. The number of deaths was nine thousand and eighty-two.

We have thus summarily described New York as it is in A. D. 1835. We now desire the reader to look on the picture overleaf, and go back with us just one hundred and sixty-two years, to a period when *New Orange* existed, with all its strange peculiarities and amusing customs.

Until Governour Stuyvesant surrendered the island to the English in 1664, the little town at its lower extremity had been denominated New Amsterdam.

The English governours Nicolls and Lovelace, with a scandalous want of veneration for Dutch cognomens, dubbed the town New York. In 1672 England and Holland were at war. During this war, which continued about two years, a Dutch fleet, commanded by Commodores Cornelis Evertsen, jr. and Jacob Benches, Captains Anthonio Colve, Nicolas Baes, and Ab. Fierd. Van Zyll, sailing in this direction, recaptured New York, in August 1673. In compliment to the Prince of Orange, they named the town New Orange. But they retained it only for a short time; yet their short administration was so peculiar and glorious, that the whole of our article shall be devoted to the history of that period. It was at this remarkable era, that the view we have placed on our first page was taken. It was originally published in Amsterdam, in Holland, and was inscribed:—*Nieuw Amsterdam onlang Nieuw Jorck genamt ende hernomen by de Nederlanders op den* 24 *Aug.* 1673; which being interpreted, signifies, *New Amsterdam lately called New York, and retaken by the Dutch on the 24th August*, 1673.

It may be well to remind the reader, that New York was first discovered by Henry Hudson, an English navigator employed by the Dutch East India Company, in 1609. A few years after, a few trading and fishing huts were erected on the lower extremity of the island. For twenty years from this period, we know but little of the progress of the settlement, and it may be legitimately considered the "dark age" of our history. In 1629 Governour Wouter Van Twiller arrived and took the command of New Amsterdam. His administration continued nine years, and has been humorously illustrated by Mr. Irving. After him succeeded William Kieft, who also administered nine years, viz. until 1647. Then followed the prosperous government of the immortal Peter Stuyvesant, which lasted seventeen years, when he was compelled to surrender to the English. Under him, viz. in 1656, the city was laid out into streets. It then contained about 120 houses, and one thousand inhabitants, including a numerous garrison. The first map and survey of the lots was made by Gov. Stuyvesant in 1660, and transmitted to the directors of the West India Company at Amsterdam. In 1664, Charles II. of England, granted to his brother the Duke of York and Albany, an extensive territory which included this colony. A small armament was fitted out in England to act against the Dutch here, who, however, speedily submitted. The English governours, Richard Nicolls and Francis Lovelace, held dominion over these territories for the space of nine years, when they were recaptured by the Dutch.

The Dutch fleet anchored off "Nayah," at the Narrows, in July 1673. It approached the fort in August following, and after the surrender of the town which took place with little resistance, continued for a short time in the North river. When it returned to Holland, the "fregatt Zee-hond," commanded by Capt. Evertsen, and the Surrinam, a 44 gun ship under the control of Gov. Colve, were left at the solicitation of the burgomasters, for the protection of the city.

The council of war of the conquerors immediately transferred its sessions from the fleet, to Fort William Hendrick. They organized themselves into a military tribunal of supreme authority, and commenced remodelling the government of the city, in conformity to its ancient customs and the exigency of the period. They accordingly re-established the order of schout burgomasters and schepens; but retained the office of mayor, adding to it that of auditor of the military council. At a call of the citizens, a sheriff, six burgomasters, and fifteen schepens were elected by a majority of votes. Anthonio Colve was commissioned governour under the provisional sanction of the states-general and the Prince of Orange. Cornelis Steenwyck was appointed counsellor of state, and Nicholas Bayard as secretary of New Netherlands, and as *geheim schryver*, or recorder of secrets; as *vendu meester*, or, auctioneer, and as book-keeper and receiver-general of the revenues. The military tribunal thus relieved from the principal burden of civil affairs, proceeded to deliberate upon measures for the permanent security of the city. A code of sanguinary military law was passed; the strictest discipline enforced among the soldiers; the mayor, at the head of the city militia, held daily parades in front of the City Hall; every evening he received the keys of the fort from the principal guard, and, accompanied by a sergeant and six armed soldiers, proceeded to lock the city gates, and station the "citizen on guard" and night watches, and returned the keys to the commanding officer. At daylight he performed the same duty in opening the gates. During the time the gates were locked, no person was allowed to go upon the "ramparts, bulwarks, rondeels or batteries of the city," on pain of corporal punishment, and if any person "without any distinction," entered or left the city except through the city gates, death was the penalty. The soldiers were daily paraded and exercised at the fort, and the guard mounted upon the ramparts; sentinels were stationed at the gates, the *reveille* played every morning at daybreak, the *tap-toe* beaten every evening at nine o'clock, at the time of the ringing of the city bell, and the daily discharges of musketry and the occasional roar of cannon, reverberating on every side, warned the neighbourhood of the presence and watchfulness of the military authorities.

Military discipline was very strictly enforced. A corporal's guard was on duty every day, when the muskets were examined by the sergeants and corporals. They were also on duty at one o'clock in the afternoon, and on Sunday at noon, when the gates were shut. The transactions of every day, were reported to the governour by a lieutenant or an ensign. At nine o'clock, when the *tap-toe* was beaten, all the soldiers and sailors were permitted to go to sleep, "without making any noise." There was an officer, but a grade only above a common soldier, called an *adelborst*, whose business it was to go the rounds and visit the sentinels, from time to time during the night, and also to see that the soldiers kept their barracks and dwellings clean, and that no dirt or water was thrown into the fort. The duty of the corporals was to see that the muskets were kept clean and well charged, and that the accoutrements were in good order; that not more than three or four men went at once to dine; that no strong liquor was introduced into the guard-house; that the soldiers were properly instructed and disciplined, and "that neither Dutch nor Englishmen entered the gates of the fort without permission, the magistrates of the city only excepted, much less that any person whatsoever should walk on the *batteries*." They were obliged to read the code of military law every time they were on guard, "that no one might in future presume to pretend his ignorance."

This code, from all we can learn of it, must have been rather sanguinary and severe. The penalty for the first crime of blasphemy, was confinement on bread and water three days; the second offence was punished by perforating the offender's tongue with a hot iron, and banishing him the province. For mutiny; for leaving his *corps de garde* without permission from his corporal; for remaining at night out of the fort without permission of his captain; for challenging to fight; for disobeying his superiour; for "opposing himself to his officer or commander:" for neglecting his duty when on service; for leaving his post, or sleeping on guard, the soldier "should lose his life without any mercy." For wounding another so that blood ensued, he should lose his hand. If he went out or came into the fort except through the ordinary gate, or cried for assistance in any fight or strife, he "should be hung and strangled." Drunkenness was punished by cashiering and banishing the offender from his company. If a soldier did not appear on parade, he was placed on the *wooden horse*, whose back was not unlike a large saw. All offenders were conducted to the gaol, the whipping-post, the wooden horse, the gallows, or to the transport ship, by an officer called the *prevost marshall*. If guilty of a libel on the good burgomasters, then he was conducted to a stake, with a bridle in his mouth, rods under his arm, and an appropriate label on his breast. In relation to the distribution of rations, we desire to note one particular, for the especial enlightenment of our modern commissaries. No ardent spirits were permitted to be circulated amongst the soldiers; but instead, every seven men received per week a half vat of *small beer*.

The *civil* government, which was ostensibly vested in the governour and his council, was sufficiently rigid perhaps to correspond with the military. Citizenship was divided into *Groot Burgerrecht* and *Klein Burgerrecht*, or great citizenship and small citizenship. Merchants and traders were not only compelled to pay a duty for the privilege of becoming small citizens, but also to pay a recognition duty, a duty to the publick wharf, a duty to the publick *pack huy*, or store-house, a duty to the overseer of the weigh-scales, and a duty to the *cyck meester*, or weigh-master, for marking their weights and measures in conformity to the true Amsterdam standard. A house was provided for orphans and widows, who were placed under *wees meesters*, or orphan masters. The city fences were viewed and regulated by *roy meesters*; and the overseers of the fire engine inspected all reed and straw roofs and wooden chimneys. There was also a court-messenger, whose multifarious duties were, to summon parties to court, to await the orders of the governour and council, sing with the school, read in church on Sunday, assist in burying the dead, and attend in tolling the bell; a "first commissary of marriage affairs," who determined all matrimonial controversies, an officer, by the bye, who would be of no small utility at the present day; a "comptroller of the revenues of the company's wind-mill," who inspected all grain before it was sent to the mill; and a city schoolmaster, who was ex-officio, clerk, chorister, and consoler of the sick!

But notwithstanding the strictness of the military discipline, and the tidy care of the civil government, wholesome amusements of all kinds, were not only allowed, but encouraged amongst the citizens. They consisted in dancing what were called the hipsey-saw, shuffle-shuffle, and simple reels, which were doubtless quite as interesting as the modern gallopade and waltz. Cards, nine-pins, balls and trick-track were frequent, and "plucking the goose" afforded much amusement. They were wont also to amuse themselves in firing guns, beating the drum, and planting May-trees in new-year's and May-day. It was a custom, common among these people, when a marriage was celebrated, to plant a May-pole before the door of the bridegroom, bound around with *ragged stockings*; the source whence this curious practice originated, we have not attempted to ex plore. Parties of pleasure frequently sailed to Nut Island, now Governour's, Pavonia, now New Jersey, or to "Breukelen;" but we see no mention of *boat-racing;* that peculiarity seems to belong to the descendants of these ancient and honourable people. In addition to these sports, they enjoyed the enviable privilege of promenading the pleasure grounds of the city. To render ourselves intelligible to a modern denizen of the town, we will explain, that we mean by pleasure grounds, "large open spaces remaining without buildings," for the health and comfort, convenience and pleasure of those who felt disposed to walk upon them and draw a breath of pure air. Piscatory excursions by day and by night were frequent, and the ladies and gentlemen, girls and boys, were fond of rambling to the commons, now the city park, to gather *nuts and strawberries!* Oftentimes, also, parties of pleasure were observed walking and riding to the Lady's Valley, the Kolck, *Bestevaers Kreupelbosch*, the Bouwery, Corlear's Hook, Sapokanikan, Bloemend' Dal, Niew Harlaem, Spyt den Duyvel Kill, or even as far as Vreedendal.[*]

Numerous orchards, gardens, pleasure grounds, arbours and forest trees, ornamented and shaded the city. The aspect of the town was diversified by hill and dale. Its eminences were clustered with buildings, and the whole formed a beautiful picture from the water. The city comprised many handsome houses, constructed of plain and glazed brick, and of rock stone, and covered with red and black tiles. It contained about three hundred buildings, and twenty-five hundred inhabitants, including two or three companies in garrison, and three companies of citizen soldiers.

The expenses incurred in repairing the fortifications, and providing for the publick defence, amounted this year, 1673, to eleven thousand gilders. In consequence of these "excessive expenses," a tax was levied upon the wealthiest inhabitants, "as often similar occurrences had been put in practice in our Fatherland." One hundred and thirty-four estates were taxed, which in the aggregate were valued at about £95,000, a sum which would hardly equal a fourth part of the value of the individual property of some of the descendants of those "wealthy inhabitants."

Gold and silver were very scarce in the ancient city, and the currency in a very unsound and fluctuating state. The ministers of the gospel, and the West India company's officers and servants, were paid in seawant or beavers. Ten years before this, beavers were valued at £1.0.0. Seawant, was the name of Indian money. It was called also wampum, or peague. It consisted of beads formed of the shells of the *quahaug*, a species of clam. More strictly, the wampum, was taken from the periwinkle, and was white; while the quahaug beads were black. Their current value, was six beads of the white, or three of the black, for an English penny. In the time of Governour Kieft, we are informed, that a vast deal of bad seawant, "nasty rough things imported from other places," was in circulation, while the "good splendid seawant, usually called *Manhattan's seawant*, was out of sight, or exported, which must cause the ruin of the country!" He, therefore, endeavoured to expel the coarse seawant, by depreciating its value. A gilder was 3s. 4d., a *last*, was 81¼ bushels, and a *schepel* three-fourths of a bushel.

DESCRIPTION OF THE ENGRAVING.

Fig. 1. The Capsey, now the Battery. The row of buildings nearest the fort, formed Pearl street, which then extended only to Whitehall street. Between Pearl street and the fort, stood the large wooden horse ten or twelve feet high, with an edged back, on which the culprit was seated, and his legs fastened with a chain to an iron stirrup, and sometimes a weight was fastened to the foot.

2, 3. The publick wharf and dock, built by the burgomasters of the city, about 1658. Here vessels loaded and unloaded, and a wharfage duty was exacted of eight stivers per last. They are now a part of Whitehall street.

4. An open space called *markt-velt*, or market-field, where a market was formerly held, and an annual fair or cattle-show. A lane ran from this field to Broad street, and has been called Marketfield street, and Petticoat lane.

5. The market house, erected in 1656.

6. A bridge across the Gentlemen's canal.

7. *Smet-straet*, now Hanover square.

8. Smet or Smith street lane, afterwards called Sloat lane.

9. The Burger's, or citizen's path.

10. The city wall, made of earth, thrown up from a moat dug in 1653, from the East to the North river, at first four or five feet deep and ten or eleven broad, sloping at the bottom. On the top of this wall, was a closely connected line of palisades, extending from the Water gate along the north side of the present Wall street to the North river.

11. The Lady's Valley, a fashionable resort in the days of Governour Kieft, denominated afterwards *Maagdepaetje*, or Virgin's path, and now known as Maiden lane. In 1692, it was called

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[*] *Note.* Bestevaars Kreupelbosch, was Grandfather's underwood. The Kolck, was the fresh pond a little north of the spot now called the swamp. Sapokanikan, is now Greenwich village. Bloemend' Dal, is Bloomingdale. Vreedendal, is now Westchester.

Green lane, and the land between it and the block house was sold for twenty shillings per foot.

A. Fort Orange, or Albany Sloops. In the East river is seen the Surrinam, besides some smaller vessels, as the "Snaeuw, and the City Leghter." When foreign vessels arrived, all the "skippers, barquiers, and boatsmen in the city," were commanded to secure themselves under the stern of the Surrinam, under penalty of having all their vessels burnt. In the time of Van Twiller and Kieft, but few vessels arrived; but during Stuyvesant's administration the arrivals were quite numerous.

B. The flag staff. When vessels arrived the flag was hoisted.

C. Fort Amsterdam, called James Fort by the English. In 1673, it was "Fort William Hendrick." It was erected in 1635, by Gov. Van Twiller, neglected by Kieft, repaired and surrounded by a stone wall by Gov. Stuyvesant, and demolished and the ground levelled in 1790 and '91. It was situated directly south of the Bowling Green, on high ground, was a regular square, with four bastions, two gates, and forty-two cannon.

D. The stone prison house, or gaol.

E. *Gereformeerde Kerck.* The Reformed Dutch Church was erected within the fort, by Governour Kieft, in 1642, the first church on this island. It was of stone, and covered with oak shingles, which exposed to the weather, soon resembled slate. The manner in which this church was founded is thus related by Captain David Pietersz de Vriez, who performed three voyages to New Netherlands, and attempted a colony on the Delaware, and another on Staten Island:—"As I was every day with Commander Kieft, dining generally at his house when I happened to be at the fort, he told me one day that he had now made a fine tavern, *built with stone*, for the English, by whom, as they passed continually with their vessels from New England to Virginia, he had suffered much, and who now might take lodgings there. I told him this was very good for travellers, but that we wanted very badly a church for our people. It was a shame that when the English passed, they should see nothing but a *mean barn*, in which we performed our worship; on the contrary, the first thing that they in New England did, when they had built fine dwellings, was to erect a fine church: we ought to do the same, it being supposed that the West India Company were very zealous in protecting the Reformed Church (Calvinist) against the Spanish tyranny, that we had good materials for it, fine oak wood, fine building stone, good lime made of oyster shells, being better than our lime in Holland. Kieft asked me then who would like to attend to this building? I replied the lovers of the reformed religion, as certainly some of them could be found. He told me that he supposed I myself was one of them, as I made the proposition, and he supposed I could contribute a hundred gilders! I replied that I agreed to do so, and that as he was governour, he should be the first. We then elected Jochem Pietersz Kuyter, who having a set of good hands, would soon procure good timber, he being also a devout Calvinist. We elected also Jan Claesz Damen, because he lived near the fort, and thus we four "kerk meesters" formed the first consistory to superintend the building of the church. The governour should furnish a few thousand gilders of the company's money, and would try to raise the remainder by subscription. The church should be built in the fort where it would be free from the depredations of the Indians. The building was soon started of stone, and was covered by English carpenters with slate, split of oak wood." The building was 72 feet long, 52 broad, and 16 feet high, and cost upwards £416. The town bell was removed to this church, and was appropriated for a variety of singular uses.

F. The governour's house, built by Van Twiller, partly of logs and brick. The secretary's office was at the north gate, at the north-east bastion of the fort. From this office the first post rider started, in the commencement of this year, (1673) to go once a month "to Boston, and Hartford, Connecticut, and other places along the road." "In obedience to his sacred majesty's commands, who enjoynes all his subjects, in their distinct colonyes, to enter into a strict allyance and correspondency with each other, as likewise for the advancement of negotiation, trade and civill commerce, and for a more speedy intelligence and dispatch of affayres," the messenger was appointed to proceed on the first of January of this year. It was accordingly proclaimed, that "If any, therefore, have any letters or small portable goods to bee conveyed to Hartford, Connecticett, Boston, or any other parts in the road, they shall bee carefully delivered according to the directions, by a sworne messenger and post, who is purposely employed in that affayre."

G. The magazines or publick store houses, or *Pack-huysen* of the Dutch West India Company, the "lords patroons" of this city, were situated in *Winckel straet*, now Stone street.

H. The weigh, or balance, erected by Gov Stuyvesant, and the standard weights and measures kept in the balance-house, were according to those of the city of Amsterdam.

I. The *Heeren Gracht*, or Gentleman's Canal, now Broad street. It was called the *Moat*, in Kieft's time, and the *Great Dyke*, as the close of the English Gov. Lovelace's administration, when it was cleaned, and the streets of the city paved. It was filled up in 1676. Near the Heeren Gracht, was the *Schapen-wey*, or sheep pasture. From the Heeren Gracht to the *Stadt-huys*, was *Hoog straet*, High street.

K. *Stadt Huys*, State House or City Hall, denominated also *Stadt-herberg*, or City Tavern, situated at the corner of *Hoog-street*, now Pearl street. In this celebrated building, the most memorable affairs of the colony were discussed and transacted. The first publick school was held in this house in 1652; it was occupied also as a court-house. During the civil war between the house of Bayard and Leisler, our colonial York and Lancaster, one party held possession of this house, and returned the fire of the other from the fort. It is believed that this building existed until within a few years, though in a modified form, and belonged to the heirs of Abraham Brinckerhoof about ten years ago.

In 1673, at the beat of the drum, half an hour before sunset, the militia (*scutlery*) of the city held their parade before the City Hall. Jacobus Van De Water, the mayor, is represented at their head. In front of the City Hall were also the stocks and whipping-post. In 1692 the English common council ordered "a pillory, cage, and ducking-stool to be forthwith built." In the rear of this building was Mire-lane, a tannery, and a bark mill. It is now Mill street.

L. The Lutheran Church, or *Luthersche Kerck*, on *de Warmoes-straet*, (street of vegetables,) now Garden street. The Lutherans, Jews, and Quakers found very little toleration from the Dutch. But the English Governour Lovelace, in 1671, authorized the Lutheran congregation to erect a church and to "seek benevolences for their brethren, here and on the Delaware." The next year, Edmundson, a Friend from England, was allowed to preach to the society of his order. He held at an inn the first Friends' meeting in the city, and the magistrates attended.

M. The Water gate and block house, situated at the north-east corner of the present Pearl and Wall streets.

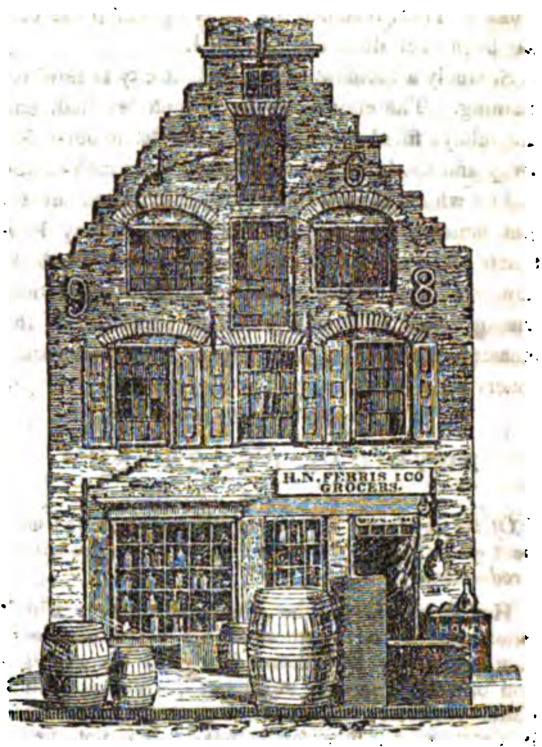
N. *Smidt's Valey*, abbreviated to *Smit's Vly*, and called by the English *Fly*. It was a piece of swampy land, where Fly Market was afterwards situated.

O. The *Land Poorte*, or City Gate, in Broadway. The wall extended to a fortification in the rear of the present Trinity Church.

P. The way to the fresh water. *Weg na't versche water*. A large swamp meadow, which communicated by a rivulet with the East river, occupied the spot near where Roosevelt street is now situated. The low land below, and which is now called the Swamp, was then Beeckman's Swamp.

Q. *Wint Molen*, or windmill, erected in 1662, on the Company's farm in Broadway, between the present Liberty and Courtlandt streets.

R. 1. R. 2. R. 3. *Rondeels*, redoubts, half moons, or round bulwarks. R. 3, is the spot now probably occupied by the Tontine Coffee House.



(The above cut is a specimen of the mode of building in the city of New Orange. The original from which it was taken was standing a year or two since.)

Corlaer's Hook was known by the Indian name of *Nechtaut*. This property, together with the Bowery, was owned by Jacobus Van Corlear, who had a plantation there in the time of Van Twiller. Corlaer was Van Twiller's trumpeter, immortalized by Knickerbocker. "On the 8th of August, 1636," says De Vriez, before quoted, "the first gunner of the fort gave a frolick. On one of the points of the fort a tent was erected, and tables and benches placed for the invited people. When the glee was now at its highest, Corlaer the trumpeter began to blow, which occasioned a quarrel, and the Koopman of the stores, and the Koopman of the cargoes, gave the trumpeter names. The trumpeter, in revenge, gave them each a drubbing: when they ran home for their swords, and would take revenge of the trumpeter, and swaggering and boasting much, went to the house of the governour, and would have eaten the trumpeter; but when the wine was evaporated in the morning their courage was somewhat lowered, and they did not endeavour much to find the trumpeter." Corlaer, it was supposed, was the founder of Schenectady, which is the Indian name for Cor-

Stratified rocks.

1. Clay-slate formation, including subordinate strata of mica-slate and gneiss, talc and chlorite slates, and quartz rock, with beds of limestone and gypsum.

Fossils very rare, zoophytes, crustacea, trilobites, &c.—monocotyledonous plants.

Upper limit of uranium and tantalium.

2. Graywacke formation, including subordinate strata of clay-slate, anthracite slate, and limestone. Fossils as in the former, but more abundant;—principal seat of anthracite coal.

3. Old red sand-stone. Fossils rare, shells and vegetable impressions;—short beds of impure coal.

4. Mountain limestone (metalliferous limestone,) extremely cavernous, imbedding nodules of hornstone; abounding in metals, particularly copper, iron, and zinc. Fossils; vertebral animals rare; corals and testacea numerous.

Unstratified rocks.

Granite, sienite, greenstone, diallage and augite rocks, serpentine rocks—porphyries, trapp rocks,—porphyry and trapp breccias.

Upper limit of native gold *in situ*, tin, bismuth, antimony, tungsten, arsenick, and auriferous pyrites.

III. Secondary or flœtz rocks.

1. Coal formation, consisting of various strata of sand-stone, slate-clay, and bituminous slate (shale,) imbedding coal and limestone—only deposite of the true caking or bituminous coal.

Fossils; abundance of vegetable remains, mostly monocotyledonous, particularly ferns;—fresh water bivalves, no marine shells;—fishes.

Unstratified rocks; porphyries and trapp breccias. Last limit of cobalt, and crystallized gray manganese ore.

Boue introduces here a red sand-stone formation, called in Germany Todt liegendes (dead layer.) It is not included in the arrangement of Conybeare and Phillips. It includes the lower red conglomerate of the Vosges and Thuringia, and the marly whitish sand-stone, or copper sand-stone of Thuringia.

2. Magnesian limestone (first flœtz limestone, Werner.—Zechstein, Alpine limestone,) including bituminous marl slate, and copper slate, zechstein and gypsum, in Germany and France; the magnesian limestone of England, between the coal measures and red marl; the magnesian limestone of the Alps, with blackish marls and dolomites, &c.

Fossils not numerous; shells in the limestone; fishes and vegetable impressions in the marl slates; marine fossils rare: upper limit of G. Productus.

Unstratified rocks.

Trapp and augite rocks; breccias.

Upper limit of mercury and nickel.

3 New red sand-stone (saliferous or variegated sand-stone; 2d flœtz sand-stone, Werner; red marl,) including the variegated sand-stones and marls of Germany, imbedding gypsum and salt, limestone, argillaceous iron ore and lignite; the red marl of England, with gypsum and salt beds; the marly sand-stone of the Alps, with black and yellow limestone, coarse conglomerate, gypsum, salt and lignite. This probably occupies the great saline deserts of Africa, Asia, and central N. America, and is probably the most extensive of all the recent formations; it every where abounds in salt springs and salines.

Fossils. Terrestrial monocotyledons, and some dicotyledons; many marine plants; testacea and corallines, only in the upper strata. According to Conybeare and Phillips, it is almost entirely destitute of organick remains.

Unstratified rocks. Amygdaloidal trapp, (Conybeare;) tertiary basalt (Boue.)

This formation, in England, is immediately succeeded by the Lias. On the continent two other formations intervene.

4. Shell limestone (muschel kalk; second flœtz limestone, Werner.) It includes the globular limestone of Germany and France; gray limestone, with encrinites, of Salzburg; reddish, with hornstone, of the Carpathians; compact, with vegetable impressions, of Recoaro [Italy;] blackish, with nodules of galena and calamine, of the Vicentin.

Fossils, numerous; cetacea, plesiosaurus [amphibia.] First appearance of belemnites and echinites.

Unstratified rocks, tertiary basalt, and augite porphyry.

5. Quader sand-stone [white sand-stone; third flœtz sand-stone, Werner,] including conglomerates, potter's clay, gypsum, and siliceous marl, with vegetable impressions and seeds; and imbedding lignite with fossil resin, hydrate of iron, nodules of heavy spar, lead glance and malachite. Upper limit of carbonate of copper. Fossils; marine fossils; monocotyledons and dicotyledons, rarely ferns. Unstratified rocks, basalt, in veins.

6. Jura limestone [third flœtz limestone, Werner; lias and oolite series, Conybeare,] including the gryphite and oolitic limestones, the slaty limestone with fishes and crustacea, and the clay marl with pea iron ore, of Germany; the gryphite limestone or *pierre bleue*, and madrepore limestone, of France; the lias, and the upper, middle and lower oolites, [Purbeck and Portland stones, coral rag, Oxford clay, cornbrash, Stonesfield slate, forest marble, fuller's earth, &c.] of England; the lias and sandstone with lignites, of the northern Alps; the oolite and nummulite limestones of Istria, &c.; it imbeds lignite, gypsum, sulphate of strontian, iron ore, &c.

Fossils. Many marine fossils, accumulated in particular spots or layers; first nummulite deposites; crustacea, amphibia, terrestrial mammalia [didelphis, with birds and insects, in the Stonesfield slate,] ferns, flags, &c. The amphibia resemble the lacertæ, and are of immense size, probably marine, [Ichthyosaurus, Plesiosaurus, &c.]

Unstratified rocks, augite porphyry, metalliferous;—granite with schorl, [Tyrol and Vicentin;] basalt and tuff.

7. Iron and green sand, including the iron sandstone, with clay and iron ore, and the green sand with fossil resin, of Germany; the iron sand, with iron ore and siliceous wood, of France; the iron sand, weald clay, and green sand, of England, &c It imbeds iron ore, lignite, &c.

Fossils, numerous, [particularly ferns in the iron sand,] and dicotyledons; fossil resin; echini, testacea, very numerous in the green sand.

Unstratified rocks, basalt, and basaltick tuff.

8. Chalk formation, including the chloritick chalk, chalk marl and earthy chalk of the continent; the chalk and chalk marl of England; the compact white limestone of Poland and Russia; the coral and nummulite limestone of the Alps. It imbeds

great masses of flints, particularly in the earthy chalk; gypsum, iron pyrites, galena, &c. in the chalk marl.

Fossils. This is the line of distinction between the remains of living and extinct species; none found in the chalk or below, having been observed in a living state. All its fossils marine; sharks, testacea, zoophytes, particularly echinites, sponges, and in the chalk marl, fishes and wood—mastodon and cervus [Boue?]

Unstratified rocks; augite porphyry, basalt, and basaltick tuff.

Upper limit of galena? [the galena of the Upper Mississippi is imbedded in loose earth.]

Chalk has not been found beyond the limits of Europe.

IV. Tertiary rocks, including all above the chalk. These are probably local deposites, occupying basins above the chalk, and when that is wanting, above some equivalent formation. The chalk forms the outline of an immense basin, extending from the centre of England and France, through Belgium, N. Germany, Silesia, and S. Poland, into Russia, probably beyond the Volga, (it is found on that river below Kasan.) On the North, it crosses the S. of Denmark and Sweden. The greater part of this basin is covered by a deep bed of sand and gravel, and the tertiary formations have not been distinctly traced; but the two English basins of London and the Isle of Wight, and the great Paris basin, have been minutely examined, and the exact order of their strata ascertained. There are other basins in the S. of France, at Nice, Perpignan, at the mouth of the Rhone, and particularly the great basin of the Garonne; on the Rhine and Mayn, and around the lake of Constance, &c. Another extends along the Danube through Moravia, Hungary, and Transylvania. Another occupies the valley of the Po, and extends along the shore of the Adriatick to Otranto; another the valley of the Arno; any many others lie along the west of Italy, partly covered by extinct volcanoes. Another, very extensive, occupies the S. of Sicily, the opposite coast of Tunis and the intervening islands. Probably there are others in Spain, Greece, Asia Minor, &c.—The immense tract extending along the Atlantick coast of the United States, from Cape Cod to the Gulf of Mexico and the Mississippi, is probably a tertiary basin. These basins do not all rest on chalk; the latter basin approaching near, if not immediately resting on the primitive.

Boue has generalized the formations of these basins, as follows:—

1. First tertiary sand-stone [molasse, plastick clay and sand,] including the nagelfluh of Switzerland, and imbedding lignite, amber, mellite, sulphur, bitumen, and semi-opals [in Moravia.]

Fossils. Insects, fishes, fresh and salt water shells intermingled, not numerous—also vegetables, and it is said, fossil bones.

Unstratified rocks, trachytes, clinkstone, augite porphyry, basalts, and their conglomerates. These rocks abound in zeolites, opals, &c. Lower limit of leucite, [Boue.]

2. First tertiary limestone [coarse limestone, calcaire grossier,] including sand and clay beds, and marls, and imbedding lignite. The London clay, or blue clay, found also in Hungary and Italy, is arranged here.

Fossils. Fresh and salt water shells abundant, particularly in the upper strata; in the London clay very various and abundant: amphibia, fishes, crustacea testacea abundant, zoophytes rare, charred wood and numerous seed vessels.

Unstratified rocks; basalt; basaltick, trachytick, and pumice conglomerates.

3. First fresh water formation; including the siliceous limestone of the Paris basin, covered by beds of gypsum containing the bones of quadrupeds, among which are several extinct genera [anoplotherium, faleotherium, &c.]

Fossils. Fresh water shells, siliceous wood, marine shells in the lower bed of gypsum, fishes in the middle, mammalia and fresh water shells in the upper.

4. Second tertiary arenaceous and calcareous formation [upper marine,] containing beds of marl, sand and sand-stone, imbedding nodules of hydrated iron, flint, hornstone, &c.

Fossils, abundant in the marl, particularly oysters; rare in the sand-stone; all marine.

Upper limit of oxyde of manganese.

5. Upper fresh water formation, consisting of sand, marls, burh-stone, and limestone containing flint and beds of burhstone, the last lying uppermost. Fossils, land and fresh water shells.

These terminate the series of regular and consolidated strata. Above them lie loose beds of rolled stones, gravel, and sand, which have been termed DILUVIUM, by the English geologists, from their supposed diluvial origin. These beds contain shells and bones of extinct and living animals, but none of the human race. Similar bones are also found in beds of clay and marl, formed by the sediment of lakes, or the ocean.

The proper alluvial beds, the washings of the sea and rivers, the weathering of rocks and unconsolidated strata, &c.; with the stony deposites from springs, lakes, &c., and the formation of vegetable earth in bogs and marshes, need no arrangement. The same may be said of the effects of volcanoes, their lavas, tufas, and ashes.

This arrangement, derived from the examination of European formations, has never been critically applied to those of the United States. There is probably, in this country, a greater simplicity in the arrangement, and a smaller number of members in the series: but what is here wanting in number, is made up by the immense extent of individual formations, such as the primitive, the coal, the red marl, and the horizontal limestone.

JOHN QUINCY ADAMS.

The following is a summary of the leading events of this gentleman's publick life.

Minister to Netherlands in	1794
do. " Portugal "	1796
" " Prussia "	1797
" " Russia "	1809
Nominated Asso. Justice Sup. Court U. S. (declined)	1811
One of the negotiators of the Treaty of Ghent	1813
Envoy and Minister Plenipotentiary to G. Britain	1815
Secretary of State under Monroe	1817
Elected President United States	1825
Turned Poet	1832
At present Member H. Representatives U. S.	

CHYMISTRY.

On the Non-metallick Volatile Elements Bromine, Iodine, Sulphur, Phosphorus, and Selenium; and their Binary Compounds.

The principal object of all arrangement in science is to assist the memory in acquiring and recalling a knowledge of the phenomena of nature; and that arrangement is best which most completely fulfils this primary design. With this view we have already divided the undecomposed substances into two classes, viz., the electro-negative, and the electro-positive; but, for further convenience, these it is necessary again to subdivide; especially as the first class contains only four known and one hypothetical (conjectural) body, the existence of which requires to be established by further proof. We have, therefore, formed one group of those elements which always assume the gaseous form under the common circumstances of atmospherick temperature and pressure. Of these, two belong to the electro-negative, and two to the electro-positive class, and their properties we have examined, and their combinations with each other.

We shall now proceed to describe five other simple substances: the first of which assumes, at common temperatures, the form of a liquid, and the others of a solid; but all agree in being *volatile*, or in rising in vapour by the application of a moderate degree of heat; they are all, likewise, conductors of electricity, and bad conductors of heat. These have been called bromine, iodine, sulphur, phosphorus, and selenium. The first two are evolved from their respective compounds (except with oxygen and chlorine) at the positive pole of the voltaick pile; and with oxygen and chlorine, and that other substance whose existence, as we have said, has been rather inferred from analogy than proved, complete the number of the electro-negative elements.

Bromine.[*] One of the sources of the greatest discouragement to those who take but a hasty view of the science of chymistry, and a cursory glance at chymical systems, is the number of new substances and unusual names with which they are perplexed at the first outset of their inquiries. The forms of matter with which they are first presented, are not those with which they are most familiar; and as they do not at once see the practical application of the knowledge thus submitted to them, they are apt impatiently to give up the pursuit. The fact undoubtedly is, that a knowledge of these elementary substances, very few of which are presented to us in nature in their simple state, or even in their binary combinations, and a considerable number of which are fruits of modern research, constitutes the foundation of the science. The chymical compounds with which we are surrounded, and particularly the products of organization, are of a very intricate nature, and a knowledge of their constitution is most easily obtained by studying the properties of the elements, and ascending by the more simple combinations to the most complex. A large proportion, however, of the elementary substances are, as we have before mentioned, of very rare occurrence, even in a state of combination; and we would guard any one from the errour of supposing, that because he may not have an opportunity of examining these rare substances, a serious obstacle is thrown in the way of his advancement; for we again affirm, that such a sound practical knowledge of the science, as every one ought to acquire, may be attained by a well-directed study of the more common elementary principles.

Bromine, as well as the next object of our investigation *Iodine*, have only been very lately discovered. Both (but especially the latter) have been considerably used in medicine—Iodine is a most valuable remedy in the cure of goitre, a disease peculiar to the inhabitants of mountainous regions, and also for scrofula and other diseases of the glands, they are objects of the greatest interest to the chymist; and the study of their properties is particularly instructive, on account of the analogy which subsists between them and chlorine.

Bromine has been obtained in very small quantities from sea-water and the ashes of sea-weeds.

If to a lixivium (washings) of the latter, or to the residual liquor of salt-pans, in which sea-water has been evaporated for the purpose of obtaining common salt, a solution of chlorine in water be added, a deep yellow colour and a peculiar odour will be produced. By distillation and passing the vapour over a salt, called muriate of lime, which detains the watery part, a few drops may be obtained of a red colour, very volatile and filling the receiver with vapours like those of nitrous acid; or, after passing chlorine into the above-named lixivium, they may be shaken up with some ether, which will dissolve the bromine; from which it will acquire a hyacinth tint, and float upon the surface. Upon agitating this solution with caustick potash, it immediately yields up the bromine to it; and the process may be repeated with the same ether; and thus by alternately using the ether and potash, the new substances may be separated from a large portion of water. The bromine is extracted from the potash, by treating it with sulphurick acid, diluted with half its weight of water, and oxyde of manganese; in an analogous way to that by which chlorine is obtained from sea-salt. It is given off by distillation in red vapours, which condense into blackish red drops in the receiver, which should be kept cool.

Bromine is a fluid of a hyacinth-red colour, when viewed by light transmitted through thin strata. At a temperature a few degrees below 0° it suddenly congeals and is very brittle. Its odour is extremely disagreeable and intense; its taste unpleasant and very powerful. It corrodes the skin and colours it yellow, but not permanently; it is very poisonous; its specifick gravity is nearly 3; it is very volatile; gives off red vapours at common temperatures, and boils at 116°.

A taper will not burn in its vapour, but it alters the tint of the flame in air.

It is soluble in water, alcohol, and particularly in ether.

It does not redden, but destroys the colour of litmus, and even of indigo.

BROMINE AND OXYGEN.

Bromick Acid. Bromine may be obtained in union with oxygen, in the form of an acid, by adding sulphurick acid to a solution of a salt, which will be hereafter described, called Bromate of Baryta, as long as any precipitate is produced.

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[*] From a Greek word, signifying "a strong disagreeable odour."

Bromick acid in solution has scarcely any odour, but possesses an acid taste, and reddens, and gradually destroys the blue colour of litmus. It is probably a compound of

1	equivalent of bromine - - - -	75
5	ditto of oxygen - - - -	40
	and its number is	115

It is therefore similar in its nature to the chlorick and nitrick acids.

BROMINE AND HYDROGEN.

Hydro-bromick Acid. Hydrogen mixed with the vapour of bromine, and exposed to the light of the sun undergoes no change; but on introducing a lighted candle, or a redhot iron into them ixture, combination ensues in the vicinity of the heated body, but not with explosion. A colourless gas possessed of acid properties, is thus generated, which is distinguished by the name of hydro-bromick acid.

It is rapidly absorbed by water, but may be preserved over mercury. It may be abundantly produced from a mixture of bromine and phosphorus, slightly moistened. It produces dense white vapours in the air from combination with its watery vapour, and possesses a strong irritating odour. The solution in water is colourless, and possesses the principal properties of the gas.

The hydro-bromick acid is decomposed by chlorine, which combines with its hydrogen, forming muriatick acid, and sets the bromine free.

The decomposition of hydro-bromick acid, by substances which combine with its bromine, affords half the volume of pure hydrogen. Hence its composition is

1	equivalent of bromine - - - -	75
1	ditto of hydrogen - - -	1
	and its equivalent	76

It is therefore analogous in its composition to muriatick acid.

BROMINE AND CHLORINE.

Chlorine of Bromine. By passing chlorine through bromine, and condensing the vapours which arise at a low temperature, a reddish-yellow fluid may be obtained with a very penetrating odour, and disagreeable taste. It is very fluid and volatile. Metals in a finely-divided state take fire in its vapour. The solution of this compound in water, has strong bleaching powers.

IODINE.*

Iodine is another undecompounded substance, which has lately been extracted from the ashes of sea-weeds, or the substance called *kelp*, which is largely produced on the western coasts of Scotland, and used for making soap. Its discovery preceded that of bromine, and, like it, its properties bear a strong analogy to those of chlorine. It is a very remarkable fact, although no useful inference has yet been drawn from the remark, that the three most electro-negative bodies, next to oxygen, connected as they likewise are, by common properties, exist almost exclusively in the ocean and its immediate productions.

The soluble parts of *kelp*, dissolved in water, afford, upon evaporation, a salt called carbonate of soda; and after its extraction, an uncrystallizable residue remains. When sulphurick acid is poured upon this, in a retort furnished with a receiver, beautiful violet vapours make their appearance, which are condensed in crystalline plates of the colour and lustre of plumbago (black lead). These crystals may be collected and dried between folds of blotting-paper. The addition of a small quantity of oxyde of manganese facilitates the process of extraction.

Iodine, thus obtained, is solid at the ordinary temperatures, in the shape of scales or plates of regular forms. Its colour is dark gray; and it possesses a metallick lustre. It is soft and friable, and may easily be rubbed into a fine powder. Its taste is hot and acrid, but it is very sparingly soluble in water. It is poisonous in large doses, but is used in medicine. At 60° of Fahrenheit, it is nearly five times as heavy as water. It produces a yellow stain upon the skin, which speedily disappears. It fuses at 225°, and assumes the elastick form, under the pressure of the atmosphere, at about 350°. In this state, when it is of a beautiful purple colour, it is 124 times heavier than hydrogen; and as it combines with that element in equal volumes, this number represents the weight of its combining proportion, or equivalent.

It has the property of forming an insoluble compound with starch, of a beautiful blue colour; and its presence may thus be detected in very minute proportions.

IODINE AND OXYGEN.

Iodick Acid. Iodine is not altered by being heated in oxygen gas; but when exposed to the protoxyde of chlorine, which holds this element by a very slight attraction, there is an immediate action; its colour changes to a bright orange, and a liquid is formed. By the application of a gentle heat, an orange compound of iodine and chlorine rises in vapour, and another of iodine and oxygen remains.

It is a white, semi-transparent solid, without smell, but with an astringent and sour taste. It may be called iodick acid.

It is decomposed by heat, and the sole products are iodine and oxygen: 13 grains afford 9.25 cubick inches of the latter gas, by weight 3.15 grains. Hence it is composed of

1	equivalent of iodine - - -	124
5	ditto of oxygen - - -	40
	and its number is	164

Its composition is therefore analogous to that of chlorick acid. It is soluble in water, and its solution first reddens, and then destroys, blue vegetable colours.

Iodick acid, when mixed with charcoal, sugar, sulphur, and other combustible bodies, detonates upon the application of heat. The solution corrodes all metals, gold and platinum not excepted.

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* From a Greek word, signifying "Violet-coloured."

IODINE AND CHLORINE.

Iodine absorbs chlorine, and forms with it an acid solid compound, whose nature is not yet perfectly understood.

IODINE AND HYDROGEN.

Hydriodick Acid. When iodine is heated in hydrogen gas, an expansion of volume takes place; an acid gas is formed which is rapidly absorbed by water, and is acted upon by mercury so readily, that it cannot long be preserved over that metal.

The same gaseous compound is produced in abundance by the action of moistened iodine and phosphorus on each other. The oxygen of the water combines with the phosphorus, and the hydrogen with the iodine. The mixture may be distilled in a retort, and the gas received into a vessel filled with common air, which, by a proper arrangement, it will expel by its superiour gravity. It has been called hydriodick acid.

The gas is colourless; has a very sour taste, and pungent odour, and reddens blue vegetable colours, without ultimately bleaching them.

It is decomposed by mercury, which unites with the iodine, and leaves half the original volume of pure hydrogen; it is therefore a compound of equal volumes of iodine, in its elastick state, and hydrogen.

Now, 50 cubick inches of iodine have been found to weigh - -	131.3 grs.
and 50 ditto of hydrogen - -	1.05
which would make the weight of 100 cubick inches of hydriodick acid	132.35

and this agrees very nearly with direct experiment. Its composition by weight is

1 equivalent of iodine - -	124
1 ditto hydrogen - -	1
and its number	125

The solution of hydriodick acid in water gives off white vapours, and, when saturated, has a density of 1.7. It does not act upon mercury, although in the gaseous state, it attacks it powerfully. Chlorine takes the hydrogen from this compound; muriatick acid is formed, and iodine liberated.

IODINE AND NITROGEN.

Iodine of Nitrogen. Iodine and nitrogen cannot be made to unite directly; but if iodine be kept in a solution of ammonia in water, the latter is decomposed; its hydrogen unites with one part of the iodine, and its nitrogen with another. The latter compound is precipitated in the form of a brownish black substance, which is the iodine of nitrogen.

Like the chloride of the same element, it is highly explosive. It detonates violently, as soon as it is dry; and the slightest pressure produces the same effect even when moist. It is supposed to consist of

3 equivalents of iodine - - -	372
1 ditto nitrogen - -	14
	386

But all attempts to collect the products of its detonation with accuracy have failed.

Iodine and Bromine. Iodine appears to form two compounds with bromine; the first is a solid, which, when heated, gives off reddish brown vapours; the second contains an additional proportion of iodine, and is a dark-coloured liquid. Their properties have not been minutely examined.

It is a curious fact, that chlorine takes hydrogen from bromine, and bromine from iodine; but the affinities of these three bodies for oxygen are in the inverse order.

NATURAL HISTORY

THE COMMON DEER.

Cervus Virginianus.

The Common Deer is the smallest American species at present known, and is found throughout the country between Canada in the north and the banks of the Orinoco in South America. In various parts of this extensive range, considerable varieties in size and colouring are presented by this species, though these being accidental and mutable, require no especial description.

The common deer is more remarkable for general slenderness and delicacy of form, than for size and vigour. The slightness and length of its limbs, small body, long and slim neck, sustaining a narrow and almost pointed head, give the animal an air of feebleness, the impression of which is only to be counteracted by observing the animated eye, the agile and playful movements, and admirable celerity of its course when its full speed is exerted. Then all that can be imagined of grace and swiftness of motion, joined with strength sufficient to continue a long career may be realized.

The common deer has always been of great importance to the aborigines of America, as an abundant source of food and raiment, nor has its value been less to the pioneers of civilization in their advances into the untrodden solitude of the west. The improvements in agriculture have long since rendered this supply of food of comparatively little value to the white man, yet vast numbers of this species are annually destroyed, equally for the sake of their flesh, hides and horns. Judging by the quantity of skins brought to our markets, and calculating the average number of common deer destroyed during the time which has elapsed since the settlement of the country, we may form an imperfect notion of the aggregate number and productiveness of this species; which, notwithstanding this extensive consumption, does not appear to be very rapidly diminishing, if we except the immediate vicinities of very thickly-peopled districts. Even in these, where the destruction of deer during the breeding season is prevented by law, the increase seems quite equal to the demand, and such humane and judicious provisions will probably preserve this beautiful race to adorn the forest long after the species is exterminated in situations where it is not thus protected.

The common deer is possessed of keen senses, especially of hearing and smelling; the sight, though good, does not appear to equal in power the senses just named, upon which the safety of the animal most immediately depends.

It is therefore necessary for the hunter to approach the deer against the wind, otherwise he is discovered by the scent, at a great distance, and his objects are entirely frustrated. The slightest noise excites the attention of the deer, and his fears appear to be more readily awakened by this cause than any other; while, on the contrary, the sight of unaccustomed objects seems rather to arouse curiosity than to produce terrour, as the animal will frequently approach, or stand gazing intently, until the hunter steals close enough to fire with fatal aim.

The deer, in herds of various numbers, frequent the forests and plains adjacent to the rivers, feeding principally upon the buds and twigs of trees and shrubs, though they are fond of grass when their favourite food is not more convenient. The herd is led by one of the largest and strongest bucks, who appears to watch over the general safety, and leads the way on all occasions. When any cause of alarm checks their progress, the leader stamps with his feet, threatens with his horns, and snorts so loudly as to be heard for a considerable distance. So long as he stands fast, or prepares for combat, the rest of the herd appear to feel secure; but when he gives way they all follow with precipitation, and vie with each other in the race.

The salines, or licks, as they are commonly called, are eagerly sought for by these deer, as they have an equal fondness for salt with other animals belonging to the same order. In licking the soil, through which the saline matter oozes to the surface, they take up very considerable quantities of the earthy matter, and this enables the hunters to discover when the deer have recently visited the spot, or that one of these places is not far distant, as the excrement of the animal then resembles small pellets of hardened clay. The watchfulness of the leader of the herd, as abovementioned, has led the hunters to form an opinion to which they pertinaciously adhere, that the deer, when they visit a salt-lick, always post one of their number as a sentinel, who is to give the alarm in case of the approach of an enemy.

Although the common deer is generally a shy and timid animal, the males are very much disposed to war with each other during the season of their sexual passion, and they are almost always inclined to fight when wounded or brought to bay. At this time they fight with their forefeet as well as their horns, and inflict severe wounds by leaping forward and striking with the edges of their hoofs held together. If a hunter falls on the ground in attempting to close in and despatch a wounded deer with his knife, he is in great danger of being killed by such blows as we have described. This deer is also said by the hunters to evince a very strong degree of animosity towards serpents, and especially to the rattlesnake, of which it has an instinctive horrour. In order to destroy one of these creatures, the deer makes a bound into the air, and alights upon the snake with all four feet brought together in a square, and these violent blows are rapidly repeated until the hated reptile is destroyed. The combats in which the males engage with each other are frequently destructive of the lives of both, in a way that would not be readily anticipated. In assaulting each other furiously, their horns come into contact, and being elastick, they yield mutually to the shock, so that the horns of one animal pass within those of the other, and thus secure them, front to front, in such a manner that neither can escape, and they torment themselves in fruitless struggles until worn down by hunger, they perish, or become the prey of wolves or other animals. Heads of deer which have thus perished are frequently found, and there is scarcely a museum in this country which has not one or more specimens. The following instance is given by SAY, in Long's Expedition to the Rocky Mountains:—"As the party were descending a ridge, their attention was called to an unusual noise proceeding from a copse of low bushes, a few rods from the path. On arriving at the spot they found two buck deer, their horns fast interlocked with each other, and both much spent with fatigue, one in particular, being so much exhausted as to be unable to stand. Perceiving that it would be impossible that they should extricate themselves, and must either linger in their present situation and die of hunger or be destroyed by the wolves, they despatched them with their knives, after having made an unavailing attempt to disentangle them. Beyond doubt many of these animals must annually thus perish."

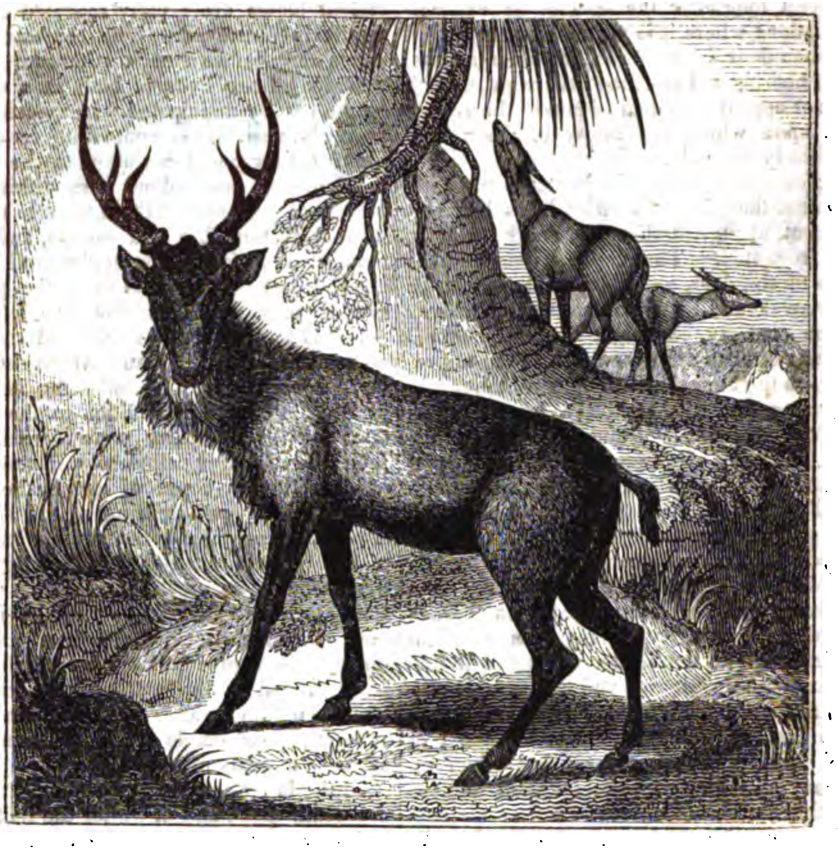
In the latter part of the summer, the fawn loses the white spots, and in winter the hair grows longer and grayish, when the animal is said by the hunters to be *in the gray*. To this coat one of a reddish colour succeeds about the end of May and beginning of June; the deer is then said to be *in the red*. Towards the end of August, the old bucks begin to change to the dark bluish colour; the doe begins this change a week or two later, when they are said to be *in the blue*. This coat gradually lengthens until it finally returns to the gray. The skin is said to be toughest in the red, thickest in the blue, and thinnest in the gray; the blue skin is most valuable.

In the month of January, the males cast their horns; the new horns soon after commence their growth. They continue in the velvet until the end of September or beginning of October, so as to be in full condition for battle during their season of love and war. These horns are not very large, but are carved forward in a peculiar manner. They have an antler placed high up on the inside of each shaft, which presents downwards, and two or three others on the posterior surface turning backwards. In the fifth year, the horns consist of two cylindrical, whitish, and moderately smooth shafts, separating at first slightly outwards and backwards, and then strongly curving forwards and downwards. From the second to the fifth year the variations of the horns consist in their gradual advance from single, slightly-curved shoots, to three and four antlers.

The flesh of the common deer is justly esteemed as an excellent article of food, when killed in the proper season, which is the Autumn. The Indians and hunters, whose necessities do not permit them to choose, feed upon these deer at all seasons. The markets of our large cities are supplied very abundantly with venison from this species every winter, and at so cheap a rate as to bring it within the means of almost every housekeeper.

The whole of the deer is used by the Indians, and, on pressing occasions, without the previous employment of fire. If a hunter kill a deer after a long and exhausting chase, he applies his mouth to the wound by which the animal was killed, in order to refresh himself by sucking some of the blood.

When very hungry, they cut a hole in the side of the animal, thrust in their hands and tear out the kidneys, which are instantly devoured, though still quivering with life.



CEYLON ELK.

Of the animals known in this island, the principal is the elephant, which is found in large herds, and is an object of very profitable traffick. The Ceylon elephant is particularly valued, and always fetches a high price. The next most remarkable animal, is the elk, of which there is a species, it is imagined, peculiar to this island. It differs from the common elk, in having a short thick mane, that covers the neck and throat. When full grown, it measures about five feet from the extremity of the forehoof to the top of the shoulder. Its colour is dark brown, except on the neck, belly, and hind part of the thighs, where it approaches nearly to black. The habits of this animal are gregarious, though it is occasionally met with alone in the woods. Its appearance betokens gentleness, and even timidity, but it is, nevertheless, very tenacious of a stranger's approach; and at a particular season it is extremely dangerous to go near it. It is very difficult to tame, for though playful and harmless while young, as soon as it begins to have a consciousness of its power, it becomes wild, and so impatient of restraint, that it cannot be reconciled even to its keeper. The female precisely resembles the male, except that it is smaller, and has no horns.

Buffaloes are common in Ceylon, and the white buffalo is sometimes found; but these are very rare, and have a sickly appearance. It is therefore probable, as many of the natives suppose, that the whiteness is occasioned by some disorder, similar to that kind of leprosy in the blacks, which turns their skin to a dull sickly white.

BIOGRAPHY.

DE WITT CLINTON.

FROM A PAINTING BY INMAN.

The truly illustrious subject of this memoir was born on the second day of March, 1769, at Little Britain, his father's residence, in Orange county. His ancestry were distinguished in various ways for their virtues and talents. He entered Columbia College in 1784, and was acknowledged to be the best scholar of his class. He is said, indeed, to have manifested at this early age, a remarkable quickness of perception, and a vigorous power of intellect, added to a fine talent for composition and extemporaneous debate. How nobly he subsequently redeemed these early pledges of future greatness! After having been admitted to the legal profession, he practised at the New York bar, till called from that career by his uncle, George Clinton, then governour of the state, who appointed him his private secretary. In addition to his appointment of secretary to the governour, he was soon honoured with the offices of secretary to the Board of Regents of the University, and of the Board of Fortifications of New York. He was twice married, first to Miss Maria Franklin, and, many years after her decease, to Miss Catharine Jones. In 1816, Mr. Clinton held the highest masonick office in the United States, and he retained the same till death. In 1797 he was elected a member of the house of assembly for the city of New York, and on the succeeding year was chosen senator. In 1801 we find him a member of the senate of the United States. During the years 1815, '16 and '17, he was but a private citizen. Leaving for a time the political arena, he entered upon that of letters, and greatly distinguished himself in various ways. He held a high rank in many of the societies for promoting benevolent purposes, and for the diffusion of science. His exertions and influence at this time were of the most direct and sensible benefit to many large classes of society; and to the reputation which he had already acquired as a statesman, he added that of a scholar, a true patriot, and a philanthropist. It is impossible for us to enumerate, in the confined space allotted to us here, the numerous societies to which he now belonged, and the many noble and useful actions he performed, but refer to some of the more elaborate memoirs of which he has been the subject. In 1803 he was appointed mayor of the city of New York, which office he held till 1807. He was reappointed in 1808, and with the exception of one year, retained the place till 1815. It is mentioned of him in this station, that, during the period when this city was visited by the pestilence, in the contagiousness of which he fully believed, he was always present at the deliberations of the common council, and rendered his daily attendance at the board of health, of which he was the presiding officer.

In 1817, Daniel D. Tompkins having been elected to the office of Vice President of the United States, Mr. Clinton was first called upon by the people of this state, to act as their chief magistrate. His term expired in 1820, when he was re-elected. In 1823, he voluntarily declined being a candidate at the ensuing election, and retired again to the ranks of private life. In 1826 he was once more re-elected, and remained governour till the period of his decease.*

On Monday, the 11th of February, 1828, after having visited the capital and performed his usual duties, he returned to his home and retired to his study. He was there suddenly seized with dangerous symptoms—rose—spoke to his son, walked into the hall—returned to his chair in the library—and expired before medical aid could be procured.

Seldom have our countrymen heard words more startling and painful than the report which now spread with rapidity through Albany—"Clinton is no more."

As a philosopher, a statesman, a writer, a scholar, an orator, a delightful companion, a correct citizen, and a pure and honest man, his name will go down to posterity divested of every reproach. We close this brief sketch with a few remarks from the Memoir of Clinton, by Dr. Hosack, his intimate friend:—

"His reputation was not confined to the country he immediately benefited by his services. In the literary circles, and in the scientifick institutions of Europe, his name was familiarly known as among the most eminent men of his day. It is an evidence of the high estimation in which he was held, that he was elected an honorary member of many of the learned societies of Great Britain, and of the continent of Europe, and that he held an extensive correspondence with some of the most distinguished men of the age. He was an honorary member of the Linnæan and the Horticultural Societies of London, and of the Wernerian Society of Edinburgh, and was in habits of correspondence with the late Sir James Edward Smith, the learned president of the first, and with Mr. Knight, and Mr. J. Sabine the able officers of the horticultural institution.

"The acknowledged reputation which Mr. Clinton attained in his literary character, when we take into view his extensive publick services, is to be ascribed, not only to his native taste and ardent love of knowledge, but to the extraordinary industry and order with which he performed his numerous and various duties. At a very early period of his life, he acquired and cultivated habits of great industry: he rose at an early hour at all seasons of the year. He observed the utmost punctuality in all his engagements; this too he was the better enabled to accomplish, by means of the order and regularity with which he divided the several duties of the day; illustrating by example, that well-known truth, that he who has the most numerous avocations, is the most attentive and the most punctual in the performance of all; every hour not occupied by his numerous publick duties, was devoted to general literature. History, poetry, taste, belleslettres, metaphysicks, natural history, theology, all in turn occupied those portions of his time, not devoted to publick business, or the duties of the various stations he filled: and he studiously noted with his pen, every fact or principle that he deemed important, or that might be rendered subservient to his intellectual improvement, or to the profit of others; by this habit, of collecting in his commonplace-book what he considered of value, he was enabled to concentrate the ample stores of his knowledge upon the various subjects which occupied his more immediate pursuit; even those smaller portions of the day that are lost by most men, were not unemployed by him: like the goldsmith, who carefully accumulates the smaller particles that drop beneath his hand, and which collected, constitute the ingot, Mr. Clinton, in like manner, carefully treasured up the minutest fragments of time, which, though inconsiderable in themselves, compose an aggregate of great value. Accordingly, when released from the severer duties which engaged his attention, a volume of the classicks, some work of science, or some of the later productions of a Scott, a Campbell, a Southey, or a Byron, whose writings have shed an unusual splendour upon the age that gave them birth, occupied those moments of relaxation: and I may add, that he had a large and well-selected library of scarce and valuable works, which continually urged him to augment those sources of knowledge and enjoyment.

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* If he was not entitled to the honour of *originating* the plan of a canal from the Hudson to Lake Erie, he was amongst the earliest who favoured the project; and to his efforts, as much as to any one man, (probably more so) is the country indebted for this magnificent work. It was executed under his gubernatorial administration.—Ed. Mag.

"The ordinary and more frivolous amusements of fashionable life presented no attractions to his mind; on the contrary, they were by him, I believe, through life, most studiously avoided, as not only involving the loss of time, money, and reputation, but utterly incompatible with those pursuits and views that belong to a man who has at heart his dignity of character, the higher interests of science, or his country's welfare.

"This leads me to notice the merits of Mr. Clinton as a writer and speaker. Mr. Clinton, as a publick speaker, was slow and deliberate in his manner, manifesting the constant exercise of his understanding while in the act of delivery: he also observed great order in the plan of his discourse, arranging his arguments with precision, and with the view of giving to each its appropriate place and effect, exhibiting thereby much previous and careful consideration of his subject; yet, such was the quickness of his perception, and power of analysis, that he did not require long preparatory deliberation to embrace a full view of the merits of the question which came before him.

"The language in which he was to convey his sentiments, the illustration with which they were to be enforced, and the ornament with which his discourse was to be embellished, cost him little or no exertion in the preparation; for such was his constant habit of reading the best writings of the standard English classicks and historians, as well as the most esteemed of the periodical publications upon the different branches of human knowledge, and other valuable writings of the present time, an age teeming with instruction, and unprecedented in beauty and simplicity of style, that those aids to eloquence were ever present to his mind, requiring no effort to summon them to his purpose: the same observation is no less applicable to his written discourses, than to those which were delivered extemporaneously, for such was his facility and rapidity in composition, derived from long practice, the moment he had analyzed and elaborated the subject in his mind, it only required the time necessary for the mechanical transcription of it, to prepare his discourse for publication. It is a fact falling within my own personal knowledge, that one of his most elaborate messages to the legislature, and which was among his most finished and the most admired of his compositions, was written in the short space of twenty-four hours.

"His daily practice, and which during the greater part of his life he had pursued, of recording important facts and occurrences, which may have had relation to the various subjects which fell within his province as a statesman, a philosopher, or a polite scholar, ever supplied him with the most abundant means of illustrating the immediate subject of his investigation. For like Boyle, Locke, Gibbon, Edwards, Priestley, and Franklin, he always read with his pencil in his hand; accordingly, it will be found that every page which Mr. Clinton has written or published, displays the valuable fruits of the labour which in this way he has undergone.

"Upon whatever subject his talents were put in requisition, and no man was more frequently called upon for the performance of publick service, owing to this daily use of the commonplace-book, he ever astonished his friends by the sudden and unexpected, as well as the able discharge of any duty he may have had occasion to perform. In like manner, such were the ample stores of his mind, that when an extemporaneous expression of his views or opinions was demanded, whether upon the seat of justice, the floor of the senate, or upon any other publick occasion, at the shortest notice he could summon to his purpose all the resources of his highly-gifted and cultivated understanding; with these at his command, it may be added, Mr. Clinton was enabled to give full force to the discussion in which he was engaged, and to avail himself of the peculiar advantage it afforded him of directing his attention to, and of observing the effects of his argument upon, every individual of the body he addressed. Such too was his perception of the effect produced upon his auditory, that I have often heard him say, that when speaking in the senate, or other deliberative assemblies, he could decide at the moment the probable result of his address, and at once ascertain how far it was safe to urge the question immediately to a decision, or to suggest the expediency of deferring such decision to a more distant day, when he could have the opportunity of adding to the friends of the measure he wished to accomplish.

"I am aware, that by many persons Mr. Clinton, in consequence of the calmness and uniformity of his manner, and perhaps a degree of monotony in his enunciation, in both of which his delivery closely resembled that of the late Mr. Pitt, was not considered an eloquent speaker. It is to be observed, that he so exclusively addressed himself to the understanding of his hearers, that he gave less attention to the manner of his communication than is customary with most publick speakers. He never indulged in rant or vehemence, either in voice or gesture, yet his clear and logical method and arrangement, the force and perspicuity of style, and dignity of manner, his strong and manly tone of voice, united with his undaunted firmness, gave to his discourse, whether in the judgment-seat, or in the hall of legislation, an influence and effect which no other individual, except the lamented Hamilton, Wells, and Emmet, has ever exercised in our state. As far as inductive reasoning, happy illustration, strong and vigorous language, a style always dignified, and oftentimes highly ornamented, can be considered as constituting eloquence, and are calculated to arrest the attention, and to carry conviction to his auditory, Mr. Clinton is entitled to the denomination of an eloquent speaker." * * * *

"To conclude; if the possession of strong native powers of mind, and those highly cultivated by extensive attainments in the different departments of human knowledge; if an innate spirit of patriotism, quickened and directed by an acquaintance with the various interests of his country, and a life devoted to the unceasing performance of publick duty, and expended in the service of his native state, entitle their possessor to respectful notice, Mr. Clinton presents the strongest claims, not only to the affections of his countrymen, but to a distinguished place among the sages, statesmen, and benefactors of the American republick. It is in the intellectual as in the natural world, although the expanse above is studded with an infinity of bodies, shedding and diffusing their portion of light, a certain number of greater magnitude and brilliancy, command the more exclusive vision of the beholder, and are so many suns communicating their effulgence and influence to other and distant worlds. In like manner, there are some intellectual luminaries much more distinguished than are the ordinary sources of light and knowledge. The Grecian and Roman republicks had their constellations of illustrious men. Themistocles and Epaminondas, Cincinnatus, Fabricius, and the Scipios. England has had her Lockes and her Newtons, her Chathams, and her Cannings. And young as our own republick yet is, her galaxy is already brightened with illustrious names. It were injustice not to assign a like elevation to the transcendent mind of Mr. Clinton, whose name, associated with those of Washington, Hamilton, Franklin, Adams, Rittenhouse, Jefferson, Fulton, and other American worthies, will ever be identified with the existence of his country, and transmitted to the latest posterity."—*Mirror.*

Learning refines and elevates the mind.

POETRY.

TO A LITTLE BOY.

BY ROBERT CHAMBERS.

My winsome one, my handsome one, my darling little boy,
The heart's pride of thy mother, and thy father's chiefest joy;
Come ride upon my shoulder, come sit upon my knee,
And prattle all the nonsense that I love to hear from thee:
With thine eyes of merry lustre, and thy pretty lisping tongue,
And thy heart that evermore lets out its humming happy song;
With thy thousand tricks so gleesome, which I bear without annoy,
Come to my arms, come to my soul, my darling little boy!

My winsome one, my fairest one, they say that later years
Will sometimes change a parent's hope for bitter grief and tears:
But *thou*, so innocent! canst thou be aught but what thou art,
And all this bloom of feeling with the bloom of face depart?
Canst thou this tabernacle fair, where God reigns bright within,
Profane, like Judah's children, with the pagan rites of sin?
No—no, so much I'll cherish thee, so clasped we'll be in one,
That bugbear guilt shall only get the father with the son;
And thou, perceiving that the grief must *me* at least destroy,
Wilt still be fair and innocent, my darling little boy!

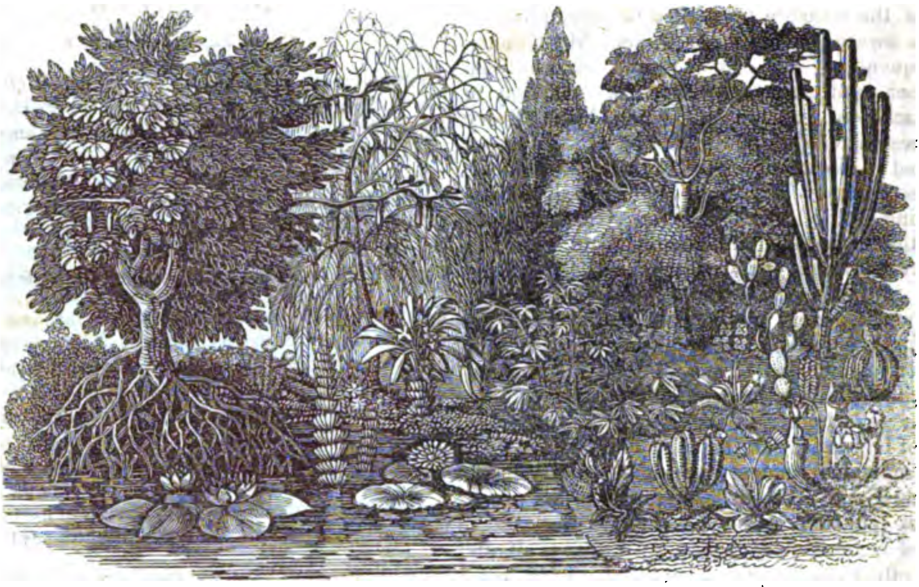
My gentle one, my blessed one, can that time ever be,
When I to thee shall be severe, or thou unkind to me?
Can any change which time may bring, this glowing passion wreck,
Or clench with rage the little hand now fondling round my neck?
Can this community of sport, to which love brings me down,
Give way to Anger's kindling glance, and Hate's malignant frown?
No—no, that time can ne'er arrive, for, whatsoe'er befall,
This heart shall still be wholly thine, or shall not be at all;
And to an offering like this thou canst not e'er be coy,
But still wilt be my faithful and my gentle little boy!

My winsome one, my gallant one, so fair, so happy now,
With thy bonnet set so proudly upon thy shining brow,
With thy fearless bounding motions, and thy laugh of thoughtless glee,
So circled by a father's love which wards each ill from thee!
Can I suppose another time when this shall all be o'er,
And thy cheek shall wear the ruddy badge of happiness no more;
When all who now delight in thee far elsewhere shall have gone,
And thou shalt pilgrimize through life, unfriended and alone,
Without an aid to strengthen or console thy troubled mind,
Save the memory of the love of those who left thee thus behind.

Oh, let me not awake the thought, but, in the present blest,
Make thee a child of wisdom—and to Heaven bequeath the rest:
Far rather let me image thee, in sunny future days,
Outdoing every deed of mine and wearing brighter bays;
With less to dull thy fervency of recollected pain,
And more, to animate thy course of glory and of gain;
A home as happy shall be thine, and I too shall be there,
The blessings purchased by thy worth in peace and love to share—
Shall see within thy beaming eye my early love repaid,
And every ill of failing life a bliss by kindness made—
Shall see thee pour upon thy son, then sitting on thy knee,
A father's gushing tenderness, such as I feel for thee;
And know, as I this moment do, no brighter, better joy,
Than thus to clasp unto thy soul thy darling little boy!

MAY 1, 1835.

BOTANY.



This engraving is intended to represent the characteristicks of dicotyledonous vegetation. Dicotyledonous plants, are those, the seeds of which have two or more cotyledons, seed-leaves or seed-lobes, and these *opposite* or verticillate. Plants of this class are recognised by the reticulation of their leaves, and other characters which will be hereafter explained. The tree on the lefthand of the picture is the mangrove (Rhizophora mangle), a native of tropical countries, growing on the seashore, so that its singular roots form a thick interwoven network above the water; it is also remarkable for its seeds germinating while in the fruit, yet hanging on the tree; they send down a radicle of some inches in length, which, when the embryo drops, sticks in the mud, and continues to grow.

On the righthand side are three species of Cactus, a very singular tribe of plants, remarkable for their leafless prickly stems, and beautiful flowers. The prickly pear, and the Indian-fig, are two species of these plants, many of them form impenetrable fences, and one, the melon-cactus, affords, in the most arid plains, a cool and refreshing drink to many animals.

In the middle of the plate, and also near the Cacti, are two species of Euphorbias or spurges, some of which resemble Cacti in appearance; and on the edge of the water, between them, is the cotton-plant (Gossypium herbaceum), to which civilized man is indebted for great part of his clothing.

The lofty forest-tree in the back-ground is the mahogany tree (Swietenia mahogani), one of the largest and finest timber trees in the world; to the left of it is seen the Casuarina, a native of New Holland, a leafless tree of singular form and structure: in the water are shown the white water lily (Nymphæa alba); the common mare's tail, with its verticillate leaves; and the Nelumbium speciosum, an aquatick, with beautiful and fragrant flowers, and handsome *peltate* leaves, affording in its roots, stalks and seeds, a pleasant wholesome food to the Chinese and Japanese.

ELEMENTS OF BOTANY.

Botany is the science which treats of the structure and properties of plants, from the largest tree to the simplest seaweed.

All bodies are either *inorganized* or *organized*.

Inorganized bodies are destitute of *life* or *vitality*: as stones, metals, water, air.

Organized bodies are possessed of vitality; and are either *animal* or *vegetable*.

These two divisions of organized bodies are generally very easily distinguishable from each other; but it is impossible to decide to which of the two some bodies belong.

Plants or vegetables have not, as animals have, the power of motion. The food of plants consists of water, air, and a small quantity of mineral matter; that of animals consists of vegetables, or of other animals.

Plants, as well as animals, are provided with *organs* essential to their existence; each organ, or set of organs, is adapted to some particular use; thus, in animals, the eyes are the organs of sight, the lungs the organs of breathing, and so on.

The sciences which treat of the structure, form, and use of organs, are called *anatomy* and *physiology*.

Plants are composed of few and simple elementary parts, and these form few organs, but they are greatly varied in appearance in the different species.

The principal compound organs of *perfect* plants are the *root;* the *stem* or *axis*, with its appendages; the *leaves*, and parts belonging to them; the *flower;* the *fruit;* and the *seed;* but these are not found in one large class, as will be subsequently explained.

The first three are called *organs of nutrition*, or those which serve to *nourish* and preserve the plant.

The others are called *organs of reproduction*, or those which enable the plant to continue its species.

The simple elementary organs of which the above are composed, are *cellular* and *vascular tissue;* but the compound organs will be first described, as being most obvious, and easily examined.

The many distinguishing terms, rendered necessary by this variation in the organs, are usually derived from the Greek or Latin languages ; but, though apparently difficult to remember, the beginner need not be discouraged, for the *names* of things, though necessary, are unimportant, compared with the knowledge of the things themselves. If, therefore, he be acquainted with the objects, their *uses* and *mutual relations*, it is of little consequence whether he remember their *names* or not ; besides, this apparent difficulty will soon vanish, if the simpler primary terms are imprinted on the memory, the others being generally compound words.

THE ROOT.

The root is the organ which chiefly supplies the plant with water for food; and, as this is derived from the earth, the root is generally buried in the ground.

That part is alone considered as root which grows in an opposite direction to the stem, from which it is also distinguished by not producing any buds.

The greater number of plants have roots, while the remainder have none ; this will be subsequently explained.

The principal kinds of roots are :—

The *tap* or *pivot root* which is, (1,) *simple*, long and taper ; as the carrot, beet, and parsnip : or like a flattened globe, as the turnip and bulbous ranunculus. (2,) *Branched*, consisting of one principal stem sending out branches, and these again dividing into smaller, till they become thin fibres. Most large trees and shrubs have branched roots ; and it is known that the thickest and longest branches of the root are those nearest the surface of the ground.

One important distinction between the root and the stem consists in the irregularity of the *branching* or *ramifications* of the former, while the arrangement of the branches in the stem is regular ; though from accidental causes, this symmetry is frequently destroyed.

The *fibrous root* consists of a quantity of long thin fibres, of different lengths and thickness, and having still finer springing from them. *Ex.:* wheat, barley, and most grasses.

Fibrous roots have occasionally small knobs or swellings on their fibres : as the *Lathyrus tuberosus*, and a species of meadow-sweet.

The root of the common bladder-wort has small hollow bubbles upon it ; whence its name.

The roots of many plants are fleshy, and composed of one or more lobes ; such as the common pig-nut, the Cyclamen, and the Dahlia. Others are furnished with a flat base, sending down a fibrous root from its under side, while on the upper a species of *bud* called a *bulb* is produced, which will be hereafter explained. *Ex.:* onion, hyacinth, lily, &c. Such roots are called *bulbiferous* roots, and are only found in one great class of plants.

The roots of many of the plants called *Orchideæ* consist of two fleshy knobs, of which one is produced during the summer, and is intended to bear the stalk and flower the following year, when the old one withers and dies off, and a new one begins again to grow.

There are several roots which are not referrible to any of the above forms ; as that of the birds-nest orchis, &c.

There are some plants, which, instead of deriving their nourishment from the earth, fix their roots into others, and live on their juices ; they are hence called *parasitical ; Ex.:* mistletoe, broom-rape, birds-nest, and many lichens, fungi, &c.

The form of the root depends very much on the nature of the soil in which it grows ; even the same species of plant will have different roots, when raised in different places, and any root will become very fibrous, if exposed to the action of running water.

A tree planted in a spot that is barren, or otherwise ill-suited to it, will send out roots to a considerable distance, in search of better soil, and to effect this, will penetrate through walls, and cross dykes.

THE STEM, OR AXIS.

The seed, when ready to grow, or *germinate*, contains the *embryo*, or future plant, in a rudimentary form, one end of which grows downwards, or towards the centre of the earth, and becomes the *root ;* the other end, taking the contrary direction, extends upwards in the air, and becomes the stem or axis, round which the leaves, flowers, and other organs are produced.

This tendency of the embryo to grow in opposite directions, is common to all *seeds* properly so called ; and, as the existence of the future plant depends thereon, they are endowed with it in so powerful a degree, that no natural obstacles, and impediments artificially created by man, can entirely overcome it ; or, if they are insurmountable, the seed perishes.

This subject will be further illustrated when the internal structure of plants is described ; but what has been here mentioned is necessary to explain the primary difference between the root and the stem or axis.

The following are the principal kinds of stems :-

1. *The trunk* is the name given to the stem of timber trees. It grows to some distance from the ground without dividing ; then sends off large *branches*, in appearance like the main stem, but smaller ; these again divide into still smaller, called *boughs ;* the last divisions of which are *twigs*, and bear the *leaves*.

The trunk is thickest close to the ground, and the main stem, as well as all the branches and boughs diminish in size, gradually to their extremities.

The outside, or the *bark*, is rough, dry, and commonly cracked ; beneath this, the trunk consists of layers of *wood*, forming a solid mass. It lives a great many years, and grows in length as well as thickness.

2. *The stipe*, is the name given to the stem of palm trees, such as the date-palm, cocoa-nut tree. ereca, &c. This differs essentially in form, structure, and mode of growth, from the trunk ; for it increases in length, but not in thickness, and has other characters which will be explained hereafter

3. *The culm* is the name of the stem of grasses, reeds, rushes, and similar plants; its principal distinction is in having solid knots from which spring leaves clasping the stem, while the rest is either hollow or filled with a light pith. Straw is the culm of wheat, barley, &c.; rushes are culms. Some plants, as the common bur-reed, and other kinds of sedges, have triangular or threecornered culms; but in general this form of stem is round, as in the common reed, grasses, &c.

4. The name of *stem* is applied to all the other kinds which do not belong to the foregoing; hence it is of endless varieties of form, size and texture.

The stems of *shrubs* and *under-shrubs*, such as the rosetree, lilach, myrtle, wallflower, &c., are *woody*. The scarletbean, lupin, stock, and most *annual* plants, have *herbaceous* stems.

It is *smooth* in the Arum, guelder-rose, valerian, periwinkle, &c.; *spinous* or *prickly* in the fullers'-teazle, rose, bramble, and in the prickly pear, &c.: *hairy* in the foxglove, geranium, bugloss, and most plants: *woolly* in the mullein; *spotted* in the hemlock, and so on.

It is generally *round*, but in mint, deadnettle, lavender, &c., it is square; and in many others it is angular, as the triangular lobelia, St. Peter's wort, nightshade, and agrimony.

It is *winged* in the sweet and everlasting peas; that is, flattened out on opposite sides, into a thin leafy edge.

When the stem is strong enough to support itself, as in most plants, it grows upright from the ground; but when it is very long and slender, or weak, it either trails on the ground, as the lesser convolvulus or bindweed, groundivy, knotgrass, and many others; or it climbs up whatever will serve as a support to it, as the briony, greater bindweed, hop, and scarletbean; hence these plants are called *climbing*.

Some of these cling, by means of *tendrils*, which are thin stalks that twist round any thing they touch, like the sweet-pea and vine; others wind their stems round and round the support, and this so closely as to suffocate the plant they grow on; as the wild honey-suckle, &c. But these latter must not be considered as parasitical, since their nourishment is not derived from the plant they thus destroy.

The stem of the common dodder is as fine as a thread; this grows for yards on the ground forming a tangled net, and mounts up certain plants, round every part of which it entwines itself so tightly and so intricately, as to prevent the possibility of separating it. It may be seen in the Autumn, on furze and nettles especially, looking like red hair; it bears a small but beautiful flower, and has no leaf.

The ivy clings to old walls and trunks of trees by means of little claws, looking like a caterpillar's legs.

Many plants have no stem; or, to speak more correctly, their stem is not *developed:* the leaves of such grow from the top of the root. The primrose, leontodon, and the plantain, are examples of stemless plants; for the *stalk* which supports the flowers is not a *stem*.

There are some forms of stems differing totally in appearance from all the above, which must be mentioned here, since they are very generally mistaken for various kinds of roots, from which, however, by their structure and properties, they are as distinct as the rest.

One kind of stem assumes the *form* of a bulb, but is distinguished from the true bulb by being solid; this is called a *cormus*;—*Ex.:* Crocus, tulip, Arum, meadow-saffron, &c.

The *tuber* is a fleshy irregular stem produced *underground*, but known to be one, by its producing buds or *eyes*, as they are called, which the true root never does;—*Ex.:* potato, Jerusalem* artichoke, arrow-root and many others.

Another kind of stem, instead of growing in the open air, creeps underground, and is incorrectly called a creeping root: stalks and leaves grow from it upwards, and fibrous roots downwards, from its knots or joints. *Ex.:* couchgrass, creeping barley, &c. The *root-stock*, *rhizoma*, is another species of creeping stem, thicker and more fleshy than the last.

Those shoots of various plants called by gardeners, suckers, runners, offsets, stools, &c., are all modifications of stems.

It must be particularly observed that the *knots*, *joints*, or places on stems of all kinds where a *bud* is produced, are called *nodi*, and the intermediate parts between these are termed *internodia*

FACTS AND PHENOMENA CONNECTED WITH WINDS.

The movements of the atmosphere, which are denominated WINDS, may be classed under the three heads of *constant*, *periodical*, and *variable*. The first blow constantly between the tropicks, and are called TRADEWINDS. The second blow steadily in one direction for nearly half the year, and during the remainder, almost from the opposite point of the compass; these are called *monsoons*, and are peculiar to the Indian ocean. The shifting of these monsoons is not all at once; and in some places the time of change is attended with calms, in others with variable winds; and particularly those of China, at ceasing to be westerly, are very subject to be tempestuous; and such is their violence, that they seem to be of the nature of West India hurricanes, and render the navigation of those seas very unsafe at that time of the year. These tempests are called *the breaking up of the monsoons*. Monsoons are a species of tradewinds, and take their denomination from an ancient pilot, who first crossed the Indian sea by their assistance. The third, or *variable winds*, are those which sweep over both the temperate polar regions of the globe, and are so inconstant, both in force and direction, that they cannot be reduced to any regular rules.

The main cause of the winds, or the flow of air, is undoubtedly the variable distribution of heat through the atmosphere. The alternation of day and night also, and the annual revolution of the seasons, are the perpetual sources of these atmospherick streams.

The wind which blows directly from the arctick pole, and which is impregnated with intense cold, must, in consequence of the rotation of the globe, appear to arrive at some point to the north of the east. In passing through the first degree of latitude, the stream of air is bent out of its course eighteen miles in the hour, towards the west: in a short space, therefore, it will seem to flow with impetuous force, and almost directly from the east. Hence the easterly northeasterly winds which prevail in the British climate, have a polar origin, and are always bitterly cold.

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* This name is a corruption of *girar-sole*, the Italian expression for "turn to the sun." The plant in question belonging to the genus *Helianthium*, or sunflower, the name of which in many languages expresses that property.

When a cold current of air from the pole sweeps over its surface rapidly, we have a *north* wind; it becomes a *northeast* wind when its motion southward is retarded; and a *southeast* when it is turned back, by mingling with a current from the *south.* All of these, except the last, are generally found to be cold winds.

When a warm current from the south descends and sweeps the surface, we have a *south* wind, if its motion northward be rapid; a *southwest* wind, when its motion northward is retarded; a *west* wind when it is checked; and a *southwest* wind, when it meets and mingles with a current of air from the north.

In our climate, south and southeast winds are the most rare; winds between north and east are almost invariably cold, those between south and west are warm: and those between the north and west of a mixed nature.

The southwest wind prevails almost half of the year at Dover, London, and in the west of England generally. This wind is scarcely felt at Liverpool, owing to its locality being in a gorge of a valley, where the western chain of hills is interrupted; and on the other hand, the southeast, so uncommon in the west of England, is the predominant wind here.

The seaman safely reckons on the aid of the tradewinds, and shapes his voyage in such a way as to reduce its performance almost to a calculation. The tradewind encircles the globe, flowing with slight deviations constantly from the east, and spreading over a zone of more than fifty degrees in breadth. It sweeps the Atlantick ocean from the coast of Africa to Brazil, and the Pacifick from the Panama to the Philippine isles and New Holland, and again the Indian seas, partially from Sumatra to Zanguebar. These winds favoured the voyage of Columbus, and conducted him to the discovery of the Mexican Archipelago. The same winds afterwards drew the Portuguese from their southern coast and carried them to the shores of Brazil.

In the Atlantick ocean, the tradewinds extend farther north on the American than on the African coast; and as we advance westward, they become gradually more easterly, and decrease in strength.

The tradewind blows constantly in the Indian ocean, from 10 deg. south to nearly 30 deg. north latitude; but to the northward of this, the winds change every six months, and blow directly opposite to their former course.

Between 3 deg. and 10 deg. south latitude, the southeast tradewind continues from April to October, but during the rest of the year, the wind blows from the northwest.

Over all the Indian ocean, to the northward of the 3d degree of south latitude, the northeast tradewind blows from October to April, and a southwest wind from April to October.

From Borneo, along the coast of Malacca, as far as China, in summer it blows from the south, and in the winter from the north by east.

Between Sumatra and New Holland the wind blows from the south during the summer months, approaching gradually to the southwest as we advance towards the coast of New Holland. It changes about the end of September, and continues in the opposite direction till April.

Between Africa and Madagascar, the direction of the wind is influenced by the coast. It blows from the northwest from October to April, and during the rest of the year from the southwest. Near the coast between Mozambique and Cape Guardafui, the winds are irregular during the whole year, owing to the different monsoons which surround that particular place.

In the Red sea the winds are regular. Between April and October they blow from the northwest, and during the other months from the southeast, keeping constantly parallel to the coast of Arabia.

On the coast of Africa, from Cape Bojador to Cape Verd, the winds are generally northwest; from thence to the island of St. Thomas, near the equator, they blow almost perpendicularly to the shore.

In the straits of Gibraltar there are seldom any winds but to the east and west. In the Mediterranean they blow nearly three fourths of the year from the north. In March and September there is always an easterly wind, which is generally more constant in spring than in autumn.

At Madras, in the Indian peninsula, the most frequent winds are the north and northeast. At Calcutta, the winds blow during January and February from the southwest and south; in March, April, and May, from the south; in June, July, August, and September, from the south and southeast; in October, November and December, from the northwest.

On the coast of Brazil, the wind blows between September and April, from the east and northeast, and between April and September, from the southwest.

The bay of Panama is the only place on the west side of a great continent where the wind shifts regularly at different seasons; there it is easterly between September and March, but between March and September it blows chiefly from the south and southwest.

The predominant winds at New York are the north and west. In Nova Scotia and Montreal, northwest winds blow nine months out of the twelve. At Quebec, the winds generally follow the direction of the river St. Lawrence, blowing either from the northeast or southwest.

At Hudson's bay, westerly winds blow nine months out of the twelve. The northwest wind occasions the greatest cold, but the north and northeast are the vehicles of snow.

In Ireland the southwest and west winds prevail; blowing most in summer, autumn and winter, and least in spring.

Winds, even when strong, are often confined in a space surprisingly small. In the temperate, but still more in the frigid zone, two or three winds are often seen blowing from or to different points within a few leagues; nay, of two ships in sight of each other, one is becalmed, while the other is seen struggling with a storm; alternately the chased and the chaser have been scudding before the breeze, and nearly motionless on the deep. In the northern seas, even strong gales, when they have carried a ship into frozen water, invariably desert her, or give place to a wind which blows from the ice.—*Lon. Seaman's Almanack.*

COTTON MANUFACTURE.

The progress of the Cotton Manufacture, from the hand and distaff that wrought a single thread, to the complicated, yet simple machinery, that spins and weaves thousands, with a perfection and velocity that would not have been credited fifty years ago, is well described in the following extract:—

Having thus traced the spinning machinery up to the present time, let us pause to cast a retrospective glance on the different stages by which the process of spinning has advanced, from the time when the one thread was in general use. Little more than sixty years since, every thread used in the manufacture of cotton, wool, worsted, and flax, throughout the world, was spun singly by the fingers of the spinner, with the aid of that *classical* instrument, the domestick spinning-wheel. In 1767, an *eight-handed* spinster sprung from the genius of Hargreaves; and the *jenny*, with still increasing powers, made its way into common use, in spite of all opposition. Two years afterwards, the more wonderful invention of Wyatt, which claims a much earlier origin, but which had disappeared, like a river that sinks into a subterraneous channel, and now rose again under the fortunate star of Arkwright, claimed yet higher admiration, as founded on principles of more extensive application. Five years later, the happy thought of combining the principles of these two inventions, to produce a third much more effectual than either, struck the mind of Crompton, who, by a perfectly original contrivance, effected the union. From twenty spindles, this machine was brought, by more finished mechanism, to admit of a hundred spindles, and thus to exercise a Briarean power. Kelly relinquished the toilsome method of turning the machine by hand, and yoked to it the strength of the rapid Clyde. Watt, with the subtiler and more potent agency of steam, moved an iron arm that never slackens or tires, which whirls round two thousand spindles in a single machine. Finally, to consummate the wonder, Roberts dismisses the spinner, and leaves the machine to its own infallible guidance. So that, in the year 1835, several thousand spindles may be seen in a single room, revolving with inconceivable rapidity, with no hand to urge their progress or to guide their operations, drawing out, twisting, and winding up as many thousand threads, with unfailing precision, indefatigable patience and strength—a scene as magical to the eye which is not familiarized with it, as the effects have been marvellous in augmenting the wealth and population of the country.

THE WESTERN HUNTER.

BY WM. C. BRYANT.

Ay, this is freedom!—these pure skies
 Were never stained with village smoke:
The fragrant wind, that through them flies,
 Is breathed from wastes by ploughs unbroke.
Here, with my rifle and my steed,
 And her who left the world for me
I plant me, where the red deer feed
 In the green desert—and am free.

For here the fair savannahs know
 No barriers in the bloomy grass;
Wherever breeze of heaven may blow,
 Or beam of heaven may glance, I pass.
In pastures, measureless as air,
 The bison is my noble game;
The bounding elk, whose antlers tear
 The branches, falls before my aim.

Mine are the river-fowl that scream
 From the long line of waving sedge;
The bear, that marks my weapon's gleam,
 Hides vainly in the forest's edge;
In vain the she-wolf stands at bay;
 The brinded catamount, that lies
High in the boughs to watch his prey,
 Even in the act of springing, dies.

With what free growth the elm and plane
 Fling their huge arms across my way,
Gray, old, and cumbered with a train
 Of vines, as huge and old and gray!
Free stray the lucid streams, and find
 No taint in these fresh lawns and shades;
Free spring the flowers that scent the wind
 Where never scythe hath swept the glades.

Alone the fire, when frost-winds sear
 The heavy herbage of the ground,
Gathers his annual harvest here,
 With roaring like the battle's sound,
And trains of smoke that heavenward tower,
 And streaming flames that sweep the plain,
Fierce, as if kindled to devour
 Earth to the wellsprings of the main.

Here, from dim woods, the aged past
 Speaks solemnly; and I behold
The boundless future in the vast
 And lonely river, seaward rolled.
Who feeds its founts with rain and dew?
 Who moves, I ask, its gliding mass,
And trains the bordering vines, whose blue
 Bright clusters tempt me as I pass?

Broad are these streams—my steed obeys,
 Plunges, and bears me through the tide.
Wide are these woods—I tread the maze
 Of giant stems, nor ask a guide.
I hunt, till day's last glimmer dies
 O'er woody vale and grassy height;
And kind the voice and glad the eyes
 That welcome my return at night.

From Blackwood's Magazine.

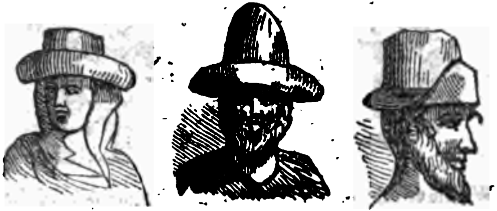
THE CONFESSION.

There's somewhat on my breast, father,
 There's somewhat on my breast!
The livelong day I sigh, father,
 At night I cannot rest;
I cannot take my rest, father,
 Though I would fain do so;
A weary weight oppresseth me—
 This weary weight of wo!

Tis not the lack of gold, father,
 Nor lack of worldly gear;
My lands are broad and fair to see,
 My friends are kind and dear;
My kin are leal and true, father,
 They mourn to see my grief;
But oh! 'tis not a kinsman's hand
 Can give my heart relief!

Tis not that Janet's false, father,
 'Tis not that she's unkind;
Though busy flatterers swarm around,
 I know her constant mind.
'Tis not *her* coldness, father,
 That chills my labouring breast—
It's that confounded cucumber
 I've ate, and can't digest.

CHAPTER ON HATS.



The use of hats is to defend the head from the rain, hail and snow, and the scorching rays of the sun. To those who wear the hair long, hats are also useful to keep it down, and prevent our being caught, or entangled in various ways as we are actively engaged in our employments. You have read the story of Absalom.

No head-dress should ever be designed unless we are very bald, to keep the head warm. On the contrary, it is necessary to health that the head should be kept cool. The natural covering, the hair, keeps it quite warm enough; and for men who use much active exercise in the open air, it would be quite too warm a covering if they did not keep it cut very short. In the house, where we are not exposed to the hot sun, the hat should usually be laid aside, as not only useless, but injurious. And all hats should be very light and cool.

The men of almost all nations, when they go abroad, wear something on their heads. In many eastern countries, especially among the Turks and Hindoos, the head-dress consists of a turban. Sometimes this turban is made of a large shawl, wrapped about the head in such a way as to be warmer and more unhealthy, in those warm climates, than our hats are to us. In other instances they are light and airy. The turban is often white, but sometimes variegated.

The Persian wears, on his head, a red or crimson bonnet. The northern Chinese wears a cap in the shape of a bell. In the south of China, the head-dress consists of a hat in the shape of a funnel. In Japan some wear conical hats, made of grass; others go without any covering but their hair. The Arabs wear cloth caps of from two to fifteen thicknesses, according to their rank or wealth. The Moor uses both a cap and a turban; and the former is red.

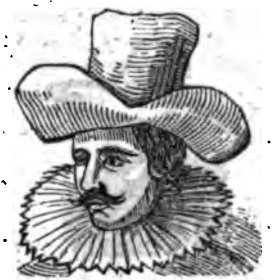
Perhaps it would be difficult to determine exactly how long it is since hats began to be worn by our European race of men. The earliest account of them with which we are acquainted is in the time of king Edward III. of England. Then, and for some time afterwards, say till the year 1500, the hats worn were of the shape represented at the head of this article. They appear to have been, as now, of various colours, white, black, scarlet, &c.

About the year 1500 to 1550, hats of the following shape appear to have been the order of the day.

In 1577, the shape was so far modified that many of the nobles had the crown extend up very high; though the shape, in other respects, remained nearly the same. The following account, from an old book, printed about 1585, will give you a better idea of the fashion of hats than any description of our own:—

"Sometimes they use them sharpe on the crowne, peaking up like the spire or shaft of a steeple, standing a quarter of a yard above the crowne of their heads; some more, some lesse, as please the fantasies of their inconstant mindes. Other some be flat, and broade on the crowne, like the battlements of a house. Another sort have round crownes, sometimes with one kind of band, sometimes with another,—now black, now white, now redde, now grene, now yellow;—now this, now that; never content with one colour, or fashion two daies to an end. And as the fashions bc rare and strange, so is the stuff whereof their hats be made divers also. Some are of silk, some of velvet, some of taffatie, somo of sarcenet, some of wool, and what more curious, some of a certaine kind of fine haire: these they call bever hattes of XX., XXX., or XL. shillings price fetched from beyonde the seas, from whenco a greate sorte of vanities doe come besides; and so common a thing it is, that every servyng countrieman, and other, even all indifferently doe weare of these hattes; for he is of no account or estimation among men, if he have not a velvet or taffatie hatte."

Sir Philip Sidney, who lived about this period, wore a hat of the following description.



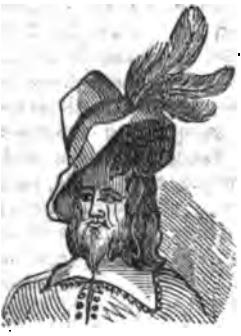
About the year 1600, it became the fashion to have the brim large, so large that it often hung down in a slouching manner. In 1607, a horseman's hat was recommended to be "a hatte which will sit close and firm upon your head with an indifferent narrow verge or brim, so that in the saults or bounds of your horse, it may neither through wideпesse, or unweildeness, fall from your head, nor with the breadth of the brim fall into your eies, and impeach your sight, both of which are verie grosse erroura."

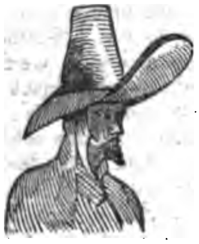
There is a song on the fashions of different nations, written in 1636, one verse of which may be interesting:—

"The Turk in linen wraps his head,
The Persian has his lawn too,
The Russe with sables furs his cap,
And change will not be drawn to.
The Spaniard's constant to his block,
The French is constant ever;
But of all felts which may be felt,
Give me your English beaver."

For our own part, notwithstanding some few inconveniences which they produce, we like the good old broad-brimmed hats. If the main object of a hat be to shelter us from the storm and from the hot sun, nothing is more indispensable than considerable breadth of brim.

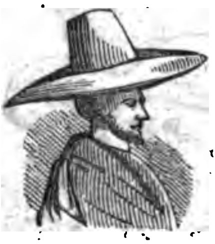
During the time of Charles I., Cromwell, Charles II., James II., and William III., very broad brims were in fashion as may be seen from these shapes. The first was fashionable about 1640, and the second about ten years afterward.



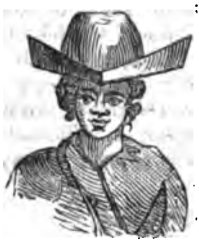


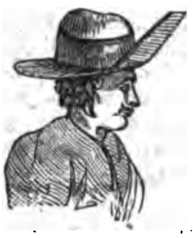
It is not a little remarkable that however uncouth a new fashion at first appears, it is but a very short time before our views entirely change, and nothing appears more graceful. Again, when we have worn a hat or a dress of a form ever so graceful and convenient, for a great length of time, we become tired of it. It is, we think, oldfashioned and vulgar; and there must be a change. So powerful is fashion, and so completely are we enslaved by it.

Here is the figure of another broad-brimmed hat, worn about 1686, or 30 to 40 years later than the foregoing.

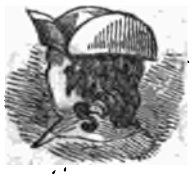


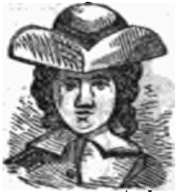
Not long after this, broad brims began to be unfashionable, and in their stead, hats were made first with one flap, (as at the right hand, in the next figure) and afterwards with two, (as at the left:) They were so made, in both cases, as to turn up.



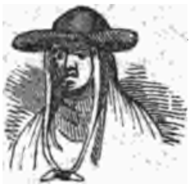


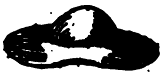
It was not until the time of the reign of Queen Anne, or somewhat later than 1700, that the regular cocked up hat became fashionable. Of these there were several forms, but the most common are represented below. They were in fashion at least 50 or 60 years. Indeed, they were not wholly out of date till about 1780 or 1790, when they disappeared; and are now only known, in this country, as a curiosity.





We have already said that the proper use of hats is to defend us from the scorching sun and the pelting storms. But Fashion, that tyrannical old lady, makes people believe a different story. Umbrellas, huge, awkward things as they are to carry about, she says, are to keep off the sun and rain, and hats to keep us warm. Or if she does not teach us this lesson, one would think she thought so; for she commands all her obedient followers to have the hat very thick and heavy. There is not a greater absurdity in the world, perhaps, than the practice of heating the head as men do now-a-days, with their thick wool and fur hats.



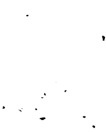


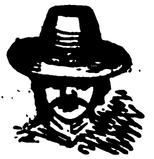
Broad Brims. As early as the fifteenth century, the cardinals and priests of the Roman Catholick church were accustomed to wear red hats with very broad brims, and with tassels hanging down on each side; as you see represented at the left hand, above.

Hats with very wide brims are still worn by the Catholick clergy in many foreign countries; and in general the colour is still red; though in Italy, they sometimes wear black hats, lined with scarlet or pink silk, and the brim a little turned up.

The Quakers, or Friends, also, were early in the use of broad-brimmed hats. The earliest specimens of the kind, were worn in the seventeenth century; and do not appear to have differed much from those worn by other classes of people. But while among others, the fashion soon changed, the Quakers continued to wear them, and the practice has continued, with little variation, to the present day, as may be seen by the second figure of the engraving above. It is the picture of a hat worn by the English Quakers, in 1723; or more than a century ago.

But the Quakers are not the only people who still retain the custom of wearing broad-brimmed hats. In many hot countries, especially where the rays of the sun are very oppressive, the people wear these hats. Here are three more engravings. That on the left hand represents a South American hat; that on the right, an Italian; and the third a Chinese.





This useful part of our dress—that is, useful, if it were made and used according to reason and common sense, is often applied to purposes for which hats were never designed. The following are examples:

"James, may I put your hat in the window, today?" have we heard, many a time, from the teacher of a school, the proprietors of which suffered the broken window panes to go unmended; and chose rather to furnish their boys with hats to keep out the wind and rain, from day to day, than to buy and set new panes of glass.

Smash went Richard's fine new beaver hat, the other day, as he came up with a couple of yellow butterflies, settled in the sand, which, in his cruelty, he was anxious to strike down. And yet this was the very first day that he ever wore it to school.

Splash, too, went a whole half dozen of eggs, one windy day, as a boy was carrying them in from the barn in his hat, on his head, covered with a little hay. This was because he was too lazy or too heedless to put them in a basket.

A man stood on the deck of a western canal boat, one day, when a sudden gust of wind carried his hat overboard. He jumped on shore, seized a pole, floated it towards the bank, and was fortunate enough to seize it, as it had fallen on the crown, just as it was sinking.

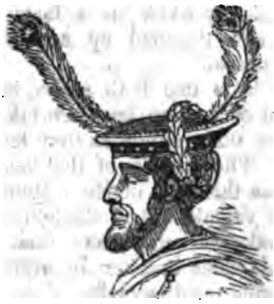
Now, he began to unpack it. First there was a handkerchief. Next, two newspapers. Then some letters. Lastly, his pocketbook, with all his money! Would it not have taught him the proper use of his pockets, had his pocketbook gone to the bottom of the canal? But perhaps he paid dearly enough for his foolish and clownish habit of carrying things in his hat; for he had his papers to dry; and this took him a long time.

We might mention half a dozen more uses to which hats are improperly applied. None of them, however, would be more ridiculous than that of making them perform all the various offices of pocket, trunk, and valise. We believe in carrying things on the head, and *in it*, sometimes; but not in this way.

Ornaments of Hats. From the earliest period, feathers have been a very common ornament in hats.

It would be impossible, in a single chapter, to mention the various forms and colours of these ornaments. They were sometimes called *plumes*. King Henry VIII. is said to have had one, consisting of eight feathers of some East Indian bird, the length of each of which was four and a half feet. The Turkish sultan presented Lord Nelson with a plume made of heron feathers, and set in diamonds. Who, that has seen a common military review in our own country, has not seen feathers in the hats or caps of the soldiers?

One of the most singular plumes, consisted of two long feathers, pointing backward and forward, as in the picture below. It represents a German head-dress of about 300 years ago.

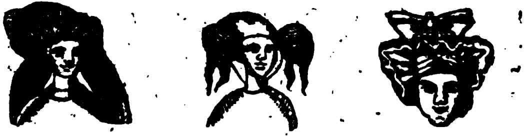


In the times of chivalry, it was the fashion to wear a badge on the hat. These badges, when given by a lady, were, of course, valued and preserved. It was said of a couple of men in the time of Henry IV., that "one ware on his head-piece his lady's sleve; and another bare, on his helme, the glove of his darlyng."

Particular plants were sometimes worn as badges of a party or family. The yew tree, the broom plant, and oak tree were used for this purpose.

Gold and silver hatbands and loops were formerly much esteemed, especially by hunters. The brim was also sometimes bound with gold and silver lace. In 1633, is mentioned "a castor hatte, with a silver hatband." Broaches, clasps, and jewels were also sometimes worn.

It may not be amiss to remark, in conclusion of this article, that the practice of uncovering the head, as a mark of respect, is peculiar to those countries where the people wear hats. In Asia, at least in many parts of it, the people uncover their feet, when they enter a house, for the same reason that we take off our hats.



LADIES' HEAD-DRESSES.

From about A. D. 1650, to 1700, that is, about a century and a half ago, many of the English ladies wore head-dresses, such as are represented in the foregoing engravings.

The first—that on the left hand, was called a *bull-head.* It is said to have been fashionable to wear these bull-heads, or bull-like foreheads about the year 1674.

The second figure represents a female "quoiffed," with a pair of *locks and curls.* These were in fashion about the same time with the bull-heads, or perhaps a little earlier. Holme, an old writer on this subject says, "they are false locks, set on wires, to make them stand at a distance from the head," just as the farthingales worn in queen Elizabeth's reign, made the clothes stand out.

The right hand figure represents a head-dress about the year 1688. It is remarkable how closely it resembles the manner of adjusting the head which began about ten years ago. The writer abovementioned, in his quaint manner, thus describes it:—"Her forehead adorned with a knot of diverse-coloured ribands; the head with a ruffle quoif, set in corners; and the like ribands behind the head." "This," he presently adds, "is a fashion-monger's head; tricked and trimmed up according to the mode of these times."

What a pity it is that both sexes, in all times, whether ancient or modern, have not taken as much pains to improve their minds as they have to adorn their persons! The outside of the head is of far less consequence than the inside. Better to lay up a good store of valuables "on the shelves of your *cranium*," as Shakspeare might say, than to have the outer part of this same cranium or brainpan set off with silver, or gold, or diamonds.

But the complaint that people spend too much in ornamenting the head, is not a new one. It is as old as the days of Solomon and Isaiah, to say the least. And it is a complaint, we fear, which is likely to be made many years longer.

MANAGEMENT OF SLEEP.

BY ROBERT MACKNISH.

The chamber in which we sleep, should be always large and airy. In modern houses, these requisites are too much overlooked; and, while the publick rooms are of great dimensions, those appropriated for sleeping are little better than closets. This errour is exceedingly detrimental to health. The apartments wherein so great a portion of life is passed, should always be roomy, and, if possible, not placed upon the ground floor, because such a situation is more apt to be damp and ill ventilated than higher up.

The next consideration applies to the bed itself, which ought to be large, and not placed close to the wall, but at some distance from it, both to avoid any dampness which may exist in the wall, and admit a free circulation of air. The curtains should never be drawn closely together, even in the coldest weather; and when the season is not severe, it is a good plan to remove them altogether. The bed or mattress ought to be rather hard. Nothing is more injurious to health than soft beds; they effeminate the individual, render his flesh soft and flabby, and incapacitate him from undergoing any privation. The texture of which the couch is made, is not of much consequence, provided it is not too soft: hence, featherbeds, or mattresses of hair or straw, are almost equally good, if suitable in this particular. I must mention, however, that the hair mattress, from being cooler, and less apt to imbibe moisture, is preferable during the summer season, to a bed of feathers. Those soft, yielding featherbeds, in which the body sinks deeply, are highly improper, from the unnatural heat and perspiration which they are sure to induce. Airbeds have been lately recommended, but I can assert, from personal experience, that they are the worst that can possibly be employed. They become very soon heated to such an unpleasant degree as to render it impossible to repose upon them with any comfort. For bedridden persons, whose skin has become irritated by long lying, the hydrostatick bed, lately brought into use in some of the publick hospitals, is the best.

The pillow as well as the bed, should be pretty hard. When very soft, the head soon sinks in it, and becomes unpleasantly heated. The objection made, to airbeds, applies with equal force to airpillows, which I several times attempted to use, but was compelled to abandon, owing to the disagreeable heat that was generated in a few minutes.

With regard to the covering, there can be no doubt that it is more wholesome to lie between sheets than blankets. For the same reason, people should avoid sleeping in flannel nightshirts. Such a degree of warmth as is communicated by those means is only justifiable in infancy and childhood, or when there is actual disease or weakness of constitution. Parents often commit a great errour in bringing up their young people under so effeminate a system.

A common custom prevails of warming the bed before going to sleep. This enervating practice should be abandoned except with delicate people, or when the cold is very intense. It is far better to let the bed be chafed by the natural heat of the body, which, even in severe weather, will be sufficient for the purpose, provided the clothing is abundant.

We ought never to sleep overloaded with clothes, but have merely what is sufficient to maintain a comfortable warmth.

When a person is in health, the atmosphere of his apartment should be cool; on this account, fires are exceedingly hurtful, and should never be had recourse to, except when the individual is delicate, or the weather intolerably severe. When they become requisite, smoke must be carefully guarded against, as fatal accidents have arisen from this cause.

The window-shutters ought never to be entirely closed, neither ought they to be kept altogether open. In the first case we are apt to oversleep ourselves, owing to the prevailing darkness with which we are surrounded; and in the second, the light which fills the apartment, especially if it be in the summer season, may disturb our repose, and waken us at an earlier hour than there is any occasion for. Under both circumstances, the eyes are liable to suffer; the darkness in the one instance, disposes them to be painfully affected, on exposure to the brilliant light of day, besides directly debilitating them—for, in remaining too much in the gloom, whether we be asleep or awake, these organs are sure to be more or less weakened. In the other case, the fierce glare of the morning sun acting upon them, perhaps for several hours before we get up, does equal injury, making them tender and easily affected by the light. The extremes of too much and too little light must, therefore, be avoided, and such a moderate portion admitted into the chamber as not to hurt the eyes, or act as too strong a stimulus in breaking our slumbers.

During the summer heats, the covering requires to be diminished, so as to suit the atmospherick temperature; and a small portion of the window drawn from the top, to promote a circulation of air; but this must be done cautiously, and the current prevented from coming directly upon the sleeper, as it might give rise to colds, and other bad consequences. The late Dr. Gregory was in the habit of sleeping with the window drawn slightly down during the whole year; and there can be no doubt that a gentle current pervading our sleeping apartments, is in the highest degree essential to health.

Nothing is so injurious as damp beds. It becomes every person, whether at home or abroad, to look to this matter, and see that the bedding on which he lies is thoroughly dry, and free from even the slightest moisture. By neglecting such a precaution, rheumatism, colds, inflammations, and death itself may ensue. Indeed, these calamities are very frequently traced to sleeping incautiously upon damp beds. For the same reason, the walls and floor should be dry, and wet clothes never hung up in the room.

We should avoid sleeping in a bed that has been occupied by the sick, till the bedding has been cleansed and thoroughly aired. When a person has died of any infectious disease, not only the clothes in which he lay, but the couch itself ought to be burned. Even the bedstead should be carefully washed and fumigated.

Delicate persons who have been accustomed to sleep upon featherbeds, must be cautious not to exchange them rashly for any other.

On going to sleep, all sorts of restraints must be removed from the body; the collar of the nightshirt should be unbuttoned and the neckcloth taken off. With regard to the head, the more lightly it is covered the better; on this account, we should wear a thin cotton or silk nightcap; and this is still better if made of network. Some persons wear worsted or flannel caps, but these are never proper, except in old or rheumatick subjects. The grand rule of health is to keep the head cool, and the feet warm; hence, the nightcap cannot be too thin. In fact, the chief use of this piece of clothing is to preserve the hair, and prevent it from being disordered and matted together.

Sleeping in stockings is a bad and uncleanly habit. By accustoming ourselves to do without any covering upon the feet, we shall seldom experience cold in these parts, if we have clothing enough to keep the rest of the system comfortable; and should they still remain cold, this can easily be obviated by wrapping a warm flannel cloth around them, or by applying to them, for a few minutes, a heated iron, or a bottle of warm water.

The posture of the body must be attended to. The head should be tolerably elevated, especially in phlethorick subjects; and the position, from the neck downwards, as nearly as possible horizontal. The half-sitting posture, with the shoulders considerably raised, is injurious, as the thoracick and abdominal viscera are thereby compressed, and respiration, digestion, and circulation, materially impeded. Lying upon the back is also improper, in consequence of its tendency to produce nightmare. Most people pass the greater part of the night upon the side, which is certainly the most comfortable position that can be assumed in sleep. According to Dr. A. Hunter, women who love their husbands generally lie upon the right side. This interesting point I have no means of ascertaining, although, doubtless, the ladies are qualified to speak decidedly upon the subject. I have known individuals who could not sleep except upon the back; but these are rare cases.

I have mentioned the necessity of a free circulation of air. On this account, it is more wholesome to sleep single, than double, for there is then less destruction of oxygen; and the atmosphere is much purer and cooler. For the same reason, the practice, so common in publick schools, of having several beds in one room, and two or three individuals in each bed, must be deleterious. When more than one sleep in a single bed, they should take care to place themselves in such a position as not to breathe in each other's faces. Some persons have a dangerous custom of covering their heads with the bedclothes. The absurdity of this practice needs no comment.

Before going to bed, the body should be brought into that state which gives us the surest chance of dropping speedily asleep. If too hot, its temperature ought to be reduced by cooling drinks, exposure to the open air, sponging, or even the cold bath; if too cold, it must be brought into a comfortable state by warmth; for both cold and heat act as stimuli, and their removal is necessary before slumber can ensue. A full stomach, also, though it sometimes promotes, generally prevents sleep; consequently, supper ought to be dispensed with, except by those who, having been long used to this meal, cannot sleep without it. As a general rule, the person who eats nothing for two or three hours before going to rest, will sleep better than he who does. His sleep will also be more refreshing, and his sensations upon waking much more gratifying. The Chinese recommend brushing the teeth previous to lying down: this is a good custom.

Sleeping after dinner is pernicious. On awaking from such indulgence, there is generally some degree of febrile excitement, in consequence of the latter stages of digestion being hurried on; it is only useful in old people, and in some cases of disease.

The weak, and those recovering from protracted illnesses, must be indulged with more sleep than such as are vigorous. Sleep, in them, supplies, in some measure, the place of nourishment, and thus becomes a most powerful auxiliary for restoring them to health. Much repose is likewise necessary to enable the system to recover from the effects of dissipation.

Too little, and too much sleep are equally injurious. Excessive wakefulness, according to Hippocrates, prevents the aliment from being digested, and generates crude humours. Too much sleep produces lassitude and corpulency, and utterly debases and stupifies the mind. Corpulent people being apt to indulge in excessive sleep, they should break this habit at once, as, in their case, it is peculiarly unwholesome. They ought to sleep little, and that little upon hard beds.

The practice of sleeping in the open air, cannot be too strongly reprobated. It is at all times dangerous, especially when carried into effect under a burning sun, or amid the damps of night. In tropical climates, where this custom is indulged in during the day, it is not unusual for the person to be struck with a *coup-de-soleil*, or some violent fever, and in our own country, nothing is more common than inflammations, rheumatisms, and dangerous colds, originating from sleeping upon the ground, either during the heat of the day, or when the evening has set in with its attendant dews and vapours.

As respects the repose of children it may be remarked that the custom of rocking them asleep in the cradle, is not to be recommended, sanctioned though it be by the voice of ages. This method of procuring slumber, not only heats the infant unneces sarily, but, in some cases, disorders the digestive organs, and, in most, produces a sort of artificial sleep, far less conducive to health, than that brought on by natural means. According to some writers, it has also a tendency to induce water in the head, a circumstance which I think possible, although I never knew a case of that disease which could be traced to such a source. The cradle, then, should be abandoned, so far as the rocking is concerned, and the child simply lulled to repose in the nurse's arms, and then deposited quietly in bed. Sleep will often be induced by gently scratching or rubbing the top of the child's head. This fact is well known to some nurses, by whom the practice is had recourse to for the purpose of provoking slumber in restless children. For the first month of their existence, children sleep almost continually, and they should be permitted to do so, for at this early age they cannot slumber too much: calm and long-continued sleep is a favourable symptom, and ought to be cherished rather than prevented, during the whole period of infancy. When, however, a child attains the age of three or four months, we should endeavour to manage so that its periods of wakefulness may occur in the daytime, instead of at night. By proper care, a child may be made to sleep at almost any hour; and, as this is always an object of importance, it should be sedulously attended to in the rearing of children. Until about the third year, they require a little sleep in the middle of the day, and pass half their time in sleep. Every succeeding year, till they attain the age of seven, the period allotted to repose should be shortened one hour, so that a child of that age may pass nine hours or thereabouts, out of the twenty-four, in a state of sleep. Children should never be awakened suddenly, or with a noise, in consequence of the terrour and starting which such a method of arousing them produces: neither should they be brought all at once from a dark room into a strong glare of light, lest their eyes be weakened, and permanent injury inflicted upon these organs.

The position in which children sleep requires to be carefully attended to. Sir Charles Bell mentions that the *enuresis infantum*, with which they are so often affected, frequently arises from lying upon the back, and that it will be removed or prevented by accustoming them to lie on the side. It is also of the greatest importance, that they be kept sufficiently warm. I believe that many infantile diseases arise from the neglect of this precaution. Children have little power of evolving heat; on this account, when delicate they should never be permitted to sleep alone, but made to lie with the nurse, that they may receive warmth from her body.

At whatever period we go to sleep, one fact is certain, that we can never with impunity convert day into night. Even in the most scorching seasons of the year, it is better to travel under the burning sunshine, than in the cool of the evening, when the dews are falling and the air is damp. A case in support of this statement, is given by Valangin in his work on Diet. Two colonels in the French army had a dispute whether it was not more safe to march in the heat of the day, or in the evening. To ascertain this point, they got permission from the commanding officer to put their respective plans into execution. Accordingly, the one with his division marched during the day, although it was in the heat of summer, and rested all night—the other slept in the daytime, and marched during the evening and part of the night. The result was, that the first performed a journey of six hundred miles, without losing a single man or horse, while the latter lost most of his horses, and several of his men.

TIDES AND METEOROLOGY.

We make the following extracts from an article in the last number of Silliman's Journal of Science, relative to tides and meteorology, by W. C. REDFIELD, of this city, who after recapitulating some of the evidence showing the absence of the usual tides at the Society Islands, and in some other parts of the Pacifick ocean, continues as follows:—

It must, therefore, be admitted, that there is a suspension or neutralization of the lunar tide-wave in the region in which those islands are situated. We find, too, that in the Atlantick it is high-water on the coast of Surinam about five o'clock on the days of the new and full of the moon, and the flood runs to the westward. At the windward islands of the West Indies, the tide is some one or two hours later, and, though exposed to the whole tide range of the Atlantick, the tides are very weak and irregular, not rising more than at the Society Islands. On the southern coast of the United States, and at the island of Bermuda, in the Atlantick, it is high-water about seven o'clock, the flood tide in the offing at the latter place *running to the northeast.* On the southern coast of Rhode Island and Massachusetts, it is high-water from seven to eight o'clock. On the southeastern coast of Nova Scotia and Newfoundland, it is high-water from eight to nine o'clock, the flood tide off the latter coast also running northeastwardly. At the Azores, or Western Islands, in lat. 38 deg. N., near the middle of the Atlantick, it is high-water about 12 o'clock, *and the flood runs to the eastward.* Finally, it is high-water on the western coasts of Ireland and Spain about two o'clock—all on the same days. These statements are approximated from the American Coast Pilot, and other authorities, care being taken to avoid the retarding effects of local obstructions as far as possible, by timing from the most extraneous positions of coast, towards the open ocean.

Viewing these phenomena in connexion with some other facts, I was led to suspect that the great tide-wave performs an actual circuit in each of the great oceanick basins, on both sides of the equator, passing *westwardly* in the equatorial latitudes, and returning *eastwardly* in the higher latitudes, above 25 deg. or 30 deg. N. and S., and analogous to the course which is pursued, as can be demonstrably shown, by the great *currents* both of the ocean and the atmosphere. If such *be* the operation of the tides, certain regions in mid-ocean would form the foci, or neutral points, in these great elliptical circuits, and would be but slightly, if at all, affected by the ordinary tides. The elaborate investigation of cotidal lines in which Professor Whewell is engaged, will probably show whether this conjecture is well founded, or whether the course of the great tide-wave be from the Southern ocean, northwardly, through the entire length of the Atlantick, and in disregard of the direct lunar influence in this ocean, as would seem to be indicated in his late paper on that subject. The greatest difficulty attending the inquiry, is in procuring correct observations from those islands and external points of coast, which bear most decidedly upon the question.

It may not be improper to state, for the satisfaction of those who may have read my articles on the storms of the American coast, that the method pursued by me in investigating the physical character of those storms, has been to procure a number of copies of clean charts of the Atlantick, and to map out all the facts which I was able to collect in relation to any one of these storms, upon one of these charts, in their true time and location, so as to obtain a connected view of these facts, both as regards their consentaneous and consecutive relations. The results have been highly satisfactory—so much so, indeed, that I have not met with the statement of a single fact which is at variance with the explanation which I have formerly given of the operation of these storms, *except in two or three instances, which proved on further inquiry, to have been erroneously stated.* The historical records of more than a century past have been freely resorted to, and the inquiry has also been extended to other coasts and seas, and has shown the existence of an unvarying system, which I have not yet attempted to describe, except in the most summary manner.

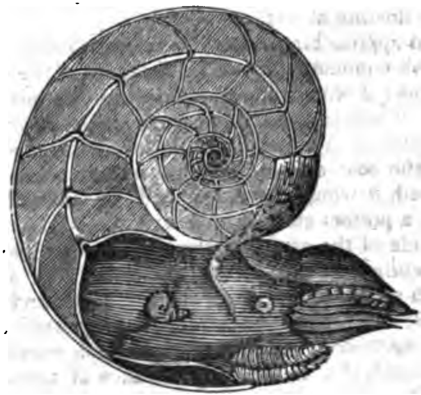
It may well be supposed that, in pursuing this inquiry by the method of a simple induction of particulars, as here stated, I have not been able to preserve an unshaken confidence in some of those "received theories," which appear to have been founded on vague generalizations, or unproved and untenable hypotheses; and I can hardly think that the reasonings which have at various times been adduced in support of these theories, from the time of Halley downwards, can be deemed either conclusive or satisfactory by an unbiassed mind, that shall give them a strict and impartial examination.

The grand errour into which all meteorologists appear to have fallen, consists in ascribing to heat and rarefaction the origin and support of the great atmospherick currents which are found to prevail over a great portion of the globe. Nor is it necessary to perceive, or point out, an adequate and undeniable physical cause for the production of these phenomena, before we can discover the inconsistency and fallacy of the reasonings by which the old system of meteorology has been supported. Such a cause, however, I consider *is* furnished in the rotative motion of the earth upon its axis, in which originates the centrifugal and other modifying influences of the gravitating power, which must always operate upon the great oceans of fluid and aerial matter which rest upon the earth's crust, producing, *of necessity*, those great currents to which we have alluded.

I have long entertained this conviction, but do not remember to have seen this great physical influence recognised in any degree, in its application to this subject, except by Sir John F. W. Herschel, in the third chapter of his popular treatise on astronomy, where, by the aid of this rotative influence, he has been able to give us the most imposing support of the received theory of winds which has ever appeared, and in which the connexion of the trades with the returning westerly winds, is, with some exceptions, correctly developed. Sir John, however, has erred, like his predecessors, in ascribing mainly, if not primarily, to heat and rarefaction, those results which should have been ascribed solely to *mechanical gravitation*, as connected with the rotative and orbitual motion of the earth's surface, the influence of which he but partially recognises in connexion with this and another subject of inquiry. I may also add, that, had this able philosopher been fully conversant with the facts which relate to the *course* and other phenomena of hurricanes, he would probably have withheld the hypothesis which he has given in a note appended to the chapter which I have alluded to, although one of the principal suggestions in this note has, undoubtedly, a proper connexion with the subject.

As I can but seldom allow myself to enter upon the discussion of these matters, the preceding suggestions may be taken for what they are thought to be worth by those under whose notice they may chance to fall; but, to prevent being misunderstood, I freely admit that heat is often an exciting, as well as modifying cause of *local* winds, and other phenomena, and that it has an incidental or subordinate action (though not such as is usually assigned) in the organization and development of storms, and that, in certain circumstances, it influences the interpositions of the moving strata of the atmosphere. Its greatest direct influence is probably exhibited in what are called land and sea breezes, or in the diurnal modifications which are exhibited by regular and general winds. But, so far from being the great prime mover of the atmospherick currents, either in producing a supposed primary north and south current, or in any other manner, I entertain no doubt that, if it were possible to preserve the atmosphere at a uniform temperature over the whole surface of the globe, the general winds could not be less brisk, but would become more constant and uniform than ever.

THE PEARLY NAUTILUS.



Nautilus Pompilius.

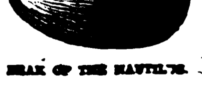
The inhabitant of this singular shell had long been sought after with eagerness by naturalists, and it is only within these few years that its true nature has been ascertained. We are indebted for this knowledge to the researches of Mr. Bennet, who, while engaged in a voyage among the Polynesian Islands, captured a specimen containing a living animal, which was taken to England, and is now deposited in the museum of the Royal College of Sur geons in London. The nautilus, although an inhabitant of a shell, belongs to that order of molluscous (*soft-bodied*) invertebral animals, to which the name of *cephalopoda* has been given, from two Greek words, meaning head and foot, because their organ of motion, or foot, is attached to the head.

We have already described two species of this order, namely, the cuttle-fish, and the argonaut. The nautilus, although in its general conformation agreeing sufficiently with these to be placed in the same order, still differs in many material points. In the case of the cuttle-fish, the shell is completely hidden by the fleshy portions of the animal; and although the argonaut possesses an external shell, it is simple in its formation, not being formed into chambers like that of the nautilus. The use of these cells to the animal we are now describing is at present not well understood, but they are supposed to be employed by their inhabitant for the purpose of rising or sinking in the water at will. The body of this *cephalopode*, it will be seen, only occupies the outer cell of its habitation, its increased size having rendered it too large to remain in that preceding it. If, as the animal deserted its smaller tenements, one after the other, they had been filled up with solid matter, the shell would have become too cumbersome for its owner; so that we here have another proof of the providing care of the Creator. We shall describe, in Mr. Bennet's own words, the capture of this interesting object:—

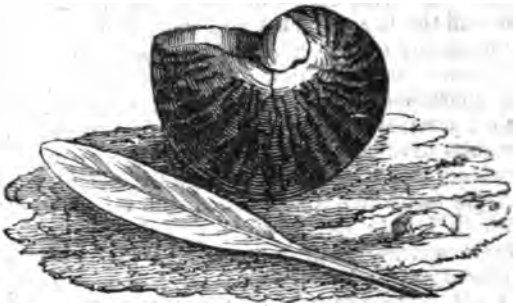
"It was on the twenty-fourth of August, 1829, (calm and fine weather, thermometer at noon 79°), in the evening, when the ship Sophia was lying at anchor in Marakini Bay, on the southwest side of the island of Erromanga, one of the New Hebrides group, Southern Pacifick ocean, that something was seen floating on the surface of the water, at some distance from the ship; to many it appeared like a small dead tortoise-shell cat, which would have been such an unusual object in this part of the world, that the boat which was alongside of the ship at the time, was sent for the purpose of ascertaining the nature of the floating object.

"On approaching near, it was observed to be the shellfish commonly known by the name of the Pearly Nautilus; it was captured and brought on board, but the shell was shattered from having been struck with the boathook in taking it, as the animal was sinking when the boat approached, and had it not been so damaged, it would have escaped. I extracted the fish in a perfect state, which was firmly attached to each side of the cavity of the shell." The hood has been stated by Dr. Shaw, as being "of a pale, reddish-purple colour, with deeper spots, and variegations," the colour, however, as it appeared in this recent specimen, was of a dark reddish brown.

Although this is the only instance of the animal itself having been brought to this country, there is but little doubt of its having been frequently taken, but as the shell was the object of the captors and not its inhabitant, the latter has been thrown away as useless. An officer in the English navy, found a nautilus in a hole in a reef of rocks, near an island on the eastern coast of Africa, the mantle of the fish, like a thin membrane, covered the shell, which was drawn in as soon as it was touched, and the elegant shell was then displayed. "I and others," says the same informant, "when it was first seen, did not notice it, regarding the animal, as the membrane enveloped the shell, merely as a piece of blubber, but having touched it by accident, the membranous covering was drawn in, and we soon secured our beautiful prize."



BEAK OF THE NAUTILUS.



THE SHELL OF THE NAUTILUS.

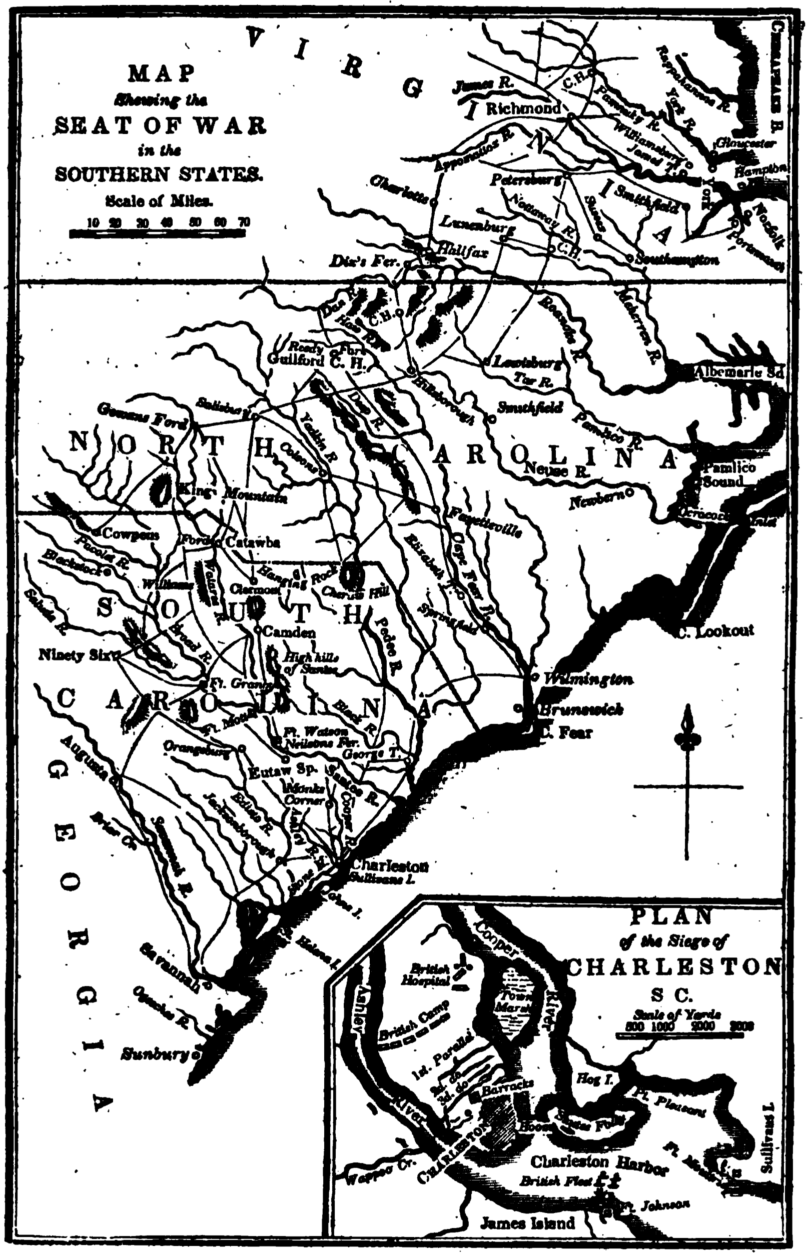
Rumphius, a German naturalist, appears to have been acquainted with its habits; he says:—"When he thus floats upon the water, he puts out his head, and all his barbs, and spreads them on the water, with the poop of the shell above water: but at the bottom he creeps in a reverse position, with his boat above him, and with his head and barbs upon the ground, making a tolerably quick progress. He keeps himself chiefly on the ground, creeping sometimes also into the nets of the fishermen: but after a storm, as the weather becomes calm, they are seen in troops floating on the water, being driven up by the agitation of the waves. Whence one may infer that they congregate in troops at the bottom. This sailing, however, is not of long continuance, for having taken in all their tentacles, they upset their boat, and so return to the bottom."

A GOOD SENTIMENT.

Children are more frequently ruined by inheriting large fortunes than by being compelled by the absence of wealth to embrace an active and industrious life, to gain a subsistence. We have always been much pleased with the answer of Phocion, one of the most renowned philosophers and lawgivers of Greece, when a friend presented him a large sum of money and pressed him to accept of it, at least for his children. "If my children," said Phocion, "resemble me, they will as well as me have enough; and if they become dissipated, I will not leave them wherewithal to maintain their luxury and debauchery."

AMERICAN APHORISMS ON EDUCATION.

"Good instruction is better than riches," was the motto that William Penn, the illustrious founder of Pennsylvania, placed on the seal of a literary incorporation, granted by him 150 years ago. "In proportion as the structure of a government gives force to publick opinion, it is essential that publick opinion should be enlightened," said Washington. "A well-instructed people alone can be a permanently free people," said Madison. "Make a crusade against ignorance," said Jefferson.



REVOLUTIONARY BATTLES ILLUSTRATED. No. 5.

OPERATIONS AT THE SOUTH.

The operations of the contending armies at the south during the revolutionary war, were extensive, various, and long continued. They were commenced early, and concluded at the latest stage. Their history would fill a large and interesting volume—and it would exhibit a detail of the most savage fierceness and brutality, on the part of the enemy, and of the most gallant bravery, skill, suffering and fortitude on the part of our countrymen, that often occur in the whole history of the war. A portion of these scenes and operations have recently been invested with a new and superiour interest by the aid of the imagination in a recent work of fiction.*

The battle of Lexington was the tocsin of the revolutionary war. As the news of that battle spread, the American people every where awoke to a sense of their immediate danger, and prepared for the impending storm. The southern provinces were not far behind the northern, in the activity and earnestness of their preparations. A few days after the battle of Lexington, South Carolina raised two regiments of infantry and one of cavalry. Virginia also immediately exhibited a readiness to yield her aid in defending this country. A great difficulty existed at this time in this province, between the English governour, Dunmore, and the Assembly. He feared the people would seize on the powder of the publick magazine at Williamsburgh, and ordered it to be carried on board a vessel called the Jasper, lying at anchor in the river James. He also talked of setting free the negroes and of destroying the city, which so greatly incensed the people, that they compelled him to leave Williamsburgh, and seek safety on board a royal armed vessel. Having collected a fleet, he resolved to harass the Virginians as much as possible, if he could not govern them. In this he was joined and assisted by the tories.

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* Horse Shoe Robinson. By James P. Kennedy.

He laid waste the coast, at various places, in the most shocking manner, murdering and burning like a pirate. He burnt Hampton, on the bay of Hampton, among the rest, and undertook to establish his camp there. But the Virginians soon drove him back upon the water. He then declared all the negro slaves to be free, and invited them to join him. A few of them succeeded in doing so.

He landed again at Norfolk, where the tories were numerous; and a battle was fought, a few miles from that city, at a place called Great Bridge, with a regiment of Virginia militia and minute men. The governour had only two hundred regulars about him. The rest was a mere mob. of black, white and gray.

The first attack was made by the British, on the American entrenchment. The battle lasted some time, with a good deal of spirit. At last, the British captain was killed, and the troops fell back upon the bridge. The governour did not like fighting; so, during the battle, he contented himself with looking on at a distance. The negroes loved fighting as little as the governour. They found it by no means pleasant to have their flesh cut to pieces with bullets; so, after a few shots, they ran away as fast as they could. The governour also thought it best to retreat, and, accordingly, he and his men went on board of their vessels.

This affair did not serve to sweeten Governour Dunmore's temper; nor did it put him in a better humour, to find that his friends, the tories at Norfolk, had been handled roughly by the people there, after his retreat with his negro allies. He now returned into the bay, with a ship of war, and sent a message ashore, declaring that, unless the people furnished him provisions, he should batter the town down about their ears. They refused to supply him: so he gave them notice in the morning, to remove the women and children; and then, with his own sloop of war, the frigate Liverpool, and two corvettes, he blazed away upon the place, 'till scarcely one stone was left upon another. The provincials, to disappoint him of his provisions, burnt the whole country round about.

In South Carolina, Governour Campbell arrived at Charleston, from England, about the same time with the news of the Lexington battle. The people were on their guard, and he tried in vain to get the better of them, by inviting the tories to assist him; but the tories were afraid to do so. He began to be frightened a little himself, being a man of less courage than Governour Dunmore; so he said little or nothing for some time.

To unmask him, the American leaders sent privately to him one Adam Macdonald, captain in a militia regiment. He called himself Dick Williams, and offered his services to the governour. The latter was delighted, and told him all his plans. Having heard them attentively, Adam went away, and told the whole to the persons who employed him.

They immediately sent a committee, Macdonald among the number, to wait upon his excellency, and request him to show his royal commission, if he had any, as governour. He declined this proposal. There were some hints then thrown out, about putting him in confinement. These came to his ears, and he retreated, with very little ceremony or delay, to an English corvette, anchored in the harbour. The Assembly requested him to return; but he refused.

Nothing more was seen of him, or his government, in Charleston. The tories were numerous in other sections of the province, however, and he mustered them together in great force. The people were alarmed. The militia was ordered out; and the two parties were on the eve of an engagement. But at length the tories were dispersed. and they gave no more trouble at that time.

The provincials in South Carolina continued to be very active. They captured Fort Johnson, on James's Island, in Charleston harbour, and placed batteries on Point Huddrel. The English ships were at last driven off. The next thing with the people was, to send an expedition after an English vessel laden with powder, which was anchored on the bank, called the Bar of St. Augustine, a town on the coast of East Florida. She was taken, and 15,000 pounds of powder were carried to Charleston.

In North Carolina, the Provincial Congress raised 1,000 regular militia, and 3,000 minute men. The English governour, Martin, disliked the appearance of things, and endeavoured to master a force of the Irish and Scotch part of the inhabitants. He also fortified his own own house, at Newbern, with artillery. The people seized upon his cannon; and he fled to a fort upon Cape Fear river.

The provincials marched after him, led on by Colonel Ashe. He retreated on board a vessel, as the other governours had done. Colonel Ashe burnt the fort to ashes the same night. The Assembly declared the governour a traitor. He answered them in a very long letter, which they ordered to be burnt by the common hangman. A large quantity of balls and powder was found in his cellar and gardens, at Newbern.

The British generals had contemplated various methods of subduing the southern provinces in the hope of making a permanent lodgment in the bosom of the country. The strong resistance which they met in the interiour, however, convinced them that an attempt to invade the country, without going to work thoroughly and systematically was totally impracticable. They therefore determined to make an attack upon the city of Charleston. in South Carolina.

Admiral Parker and General Clinton reached Charleston harbour on the 28th of June, and, with eleven large vessels of war, commenced a tremendous attack upon Fort Moultrie. This stood upon Sullivan's Island, six miles from the city, and was built of a kind of wood called palmetto, so spongy and soft, that the balls were buried in it, and no splinters were thrown off.

The fort was defended by sixty pieces of cannon. Ship after ship poured in their tremendous broadsides. The whole harbour seemed to be but a sheet of flame. The Americans aimed well, and every shot had its effect. Some of the English vessels were soon stranded. The Thunder, after firing more than sixty bombs, was disabled. The Bristol was almost destroyed, and a great number of men were killed.

The fire of the fort suddenly stopped. Their powder was exhausted. The enemy thought themselves sure of the victory, and the ships moved nearer, with their flags flying, and their drums beating. But the Americans were soon supplied from the shore, and the battle lasted, hotter than ever, till seven in the evening. The English drew off in the night, and the enterprise was abandoned. This defence of Fort Moultrie was one of the most gallant actions of the war.

Every man and every officer fought like a hero. Congress voted their thanks to the whole garrison, and to several of the officers by name. A sword was presented to a sergeant of grenadiers, named Jasper. In the heat of the battle, the staff of the fort flag had been cut down by a ball. Jasper sprang after it, fastened it to the rammer of a cannon, and hoisted it again, amid the fire of the enemy.

The British had, however, gained possession of many portions of the southern provinces, particularly of Georgia. The British general Prevost, had possession of Savannah. He was besieged by General Lincoln in 1799, but Lincoln failed of success, and was obliged to relinquish the siege. Prevost ravaged the country, burning and plundering without mercy. He met, however, much brave and determined resistance, and many interesting anecdotes are related of the most daring and chivalrous deeds on the part of some of the provincials.

But notwithstanding the repeated instances of bravery, and the activity and cunning of the hardy bands that arose every where in the South, the British overrun Georgia and the two Carolinas. They had succeeded in taking Charleston on the 11th of May, 1780, after a long siege, and a brave defence by General Lincoln. This way then was opened to ravage the country. Their course was marked with savage barbarity and cruelty, and a reckless waste of property. They not only sacked every village, but burnt every house; destroyed the crops and drove away the cattle; not content with pillaging houses and robbing individuals of their property, "gasping for gold, they went rummaging amongst the tombs." But their inhuman revelry was not of long continuance. Soon after Charleston was taken, General Gates was sent to take command of the Southern army. He was joined by hundreds of the Carolina militia. Congress sent him some fine Maryland and Delaware troops also. They had a very long and hard march through the woods, finding nothing to eat on the way, but peaches and green corn, with now and then a flock of wild turkeys, or a drove of wild hogs. But they were brave men, and did not murmur. They even joked each other on account of their thin faces, and lank legs.

A battle took place on the 16th of August, near Camden, South Carolina, between Gates and the British under Lord Cornwallis. The former was defeated, and fled eighty miles into the back country. The lean, northern soldiers, we have just mentioned, fought nobly an hour after all the rest had been routed like an army of rotten sheep. The brave Baron de Kalb was wounded in eleven places. He fell from his horse, and died in the hands of the British. He was a Frenchman, and sent his compliments, in his last moments, to "his gallant Maryland and Delaware soldiers."

Generals Marion and Sumpter gave the British great trouble during this campaign. Small parties of the mountain militia joined them, and they swept down upon the enemy, whereever they could find them in small parties. The farmers' wives furnished them pewter spoons and platters, to make into bullets; and they forged swords of scythes and the saws of sawmills.

In October, sixteen hundred of these mountaineers mustered together to attack a British force under Major Ferguson, who had encamped not far from the mountains. For weeks, they had no salt, bread, or spirits; they slept upon boughs of trees, without blankets, drank only from the running streams, and lived upon wild game, or ears of corn, and pumpkins, roasted by their great log-fires in the woods.

They were to assault Ferguson in three parties, and Colonel Cleaveland addressed his party in these words:—"My brave boys, we have beat the red-coats and the tories, and we can beat them again. They are all cowards. You must fight, each man for himself, without orders. Fire as quick as you can, and stand as long as you can. If you must retreat, get behind the trees—don't run, my fine fellows, don't run!" "Hurrah for the mountaineers!" cried they, and rushed down upon the enemy.

The Americans were driven back at the point of the bayonet; but they only lay down among the logs and rocks, and being sharp shooters, killed more than two hundred of the enemy. Ferguson was killed himself, and eight hundred of his soldiers surrendered. Ten of the most savage tories, notorious rascals, were hung up on the neighbouring trees.

With the year 1781, the war drew rapidly toward a close. It was carried on almost entirely in the Southern provinces. General Greene was appointed to command the American forces in that quarter. At the time of his arrival, they were a miserable, half-starved militia, of three thousand men. They marked the frozen ground with the blood of their bare feet, and lived half the time upon frogs, taken from the swamps, wild game, rice, and wretchedly lean cattle.

But they were soon reinforced; and small parties, under Sumpter, Marion, Morgan, and others, often annoyed the forces of Cornwallis. Colonel Washington laid siege to a strong blockhouse near Camden, defended by a British colonel, and a hundred tories. He had no cannon, and few men; but he carved out a few pine logs in the shape of cannon, mounted them on wheels, and summoned the tories to surrender. They were frightened at the appearance of his big cannon and surrendered. Not a shot was fired upon either side.

On the 17th of January, Colonel Morgan, with eight hundred militia, was attacked at a place called the Cowpens, in South Carolina, by Tarleton, a famous British officer, with eleven hundred men and two cannon. The enemy rushed on with a tremendous shout. The front line of militia were driven back. Tarleton pursued them, at full gallop, with his troopers, and fell upon the second line. They too were giving way.

At this moment, Colonel Washington charged Tarleton with forty-five militiamen, mounted, and armed as troopers. The whole line now rallied under Colonel Howard, and advanced with fixed bayonets. The British fled. Their cannon were left behind; three hundred British soldiers were killed and wounded, and five hundred were taken prisoners; eight hundred muskets, seventy negroes, and one hundred dragoon horses, also fell into the hands of the Americans. Many British officers were killed. Morgan always told his sharp-shooters "to aim at the epaulets, and not at the poor rascals who fought for sixpence a day."

General Green was now driven back, by Cornwallis, into North Carolina. The latter pursued him through the province, over mountains and swamps, and arrived at the river Dan, just as Greene had crossed it. Cornwallis now found it necessary to turn about; and so he marched back, and Greene soon followed him with new forces.

Sumpter joined him at Orangeburg, having received orders to do so during his hasty retreat before the enemy. It seems Greene could find no man in his army who would carry the message to Sumpter. A country girl, named Emily Geiger, at last offered her services, and was sent. She was taken by the British, and confined for the purpose of being searched. She, however, ate up the letter which she carried, piece by piece. They released her, to go home, as they supposed; but she took a roundabout way, reached Sumpter's camp safely, and delivered her message, in her own words.

The Americans were defeated near Guilford court-house on the 15th of March. But Cornwallis retreated soon after. He had suffered great loss, and his army was small. A militia colonel cried out in this battle, as the British were marching up, "They will surround us." He was frightened himself, and frightened his soldiers so much, that they gave way while the enemy were one hundred and forty yards distant.

Colonel Washington, at the head of his troopers, nearly captured Cornwallis in this battle. He was just rushing upon the British general, when his cap fell from his head. As he leaped to the ground for it, the leading American officer behind him was shot through the body, and rendered unable to manage his horse. The animal wheeled round, and galloped off with his rider; and the troop, supposing it was Washington's order, wheeled about also, and rode off at full speed.

Fort Watson, between Camden and Charleston, surrendered in April, with 114 men, to General Marion. The fort was built on a mound of earth thirty feet high; but Marion with his mountaineers, had raised a work which overlooked it in such a manner, that not a man in the fort could show his head over the parapets, or scarcely point his musket through a hole in the walls, but the riflemen above would shoot him. Greene was again defeated at Camden, on the 25th of April, by nine hundred English under Lord Rawdon.

But in a month or two, the British lost six forts, and that of Augusta was among them. Here there were three hundred men, as a garrison, who almost buried themselves under ground, while the Americans were building up batteries within thirty yards, which swept the fort through and through. Greene and all his officers, and all his men, fought nobly the whole season. "I will recover the province," said the general, "or die in the attempt." It is remarkable, that although his force was much inferiour to that of Cornwallis, and though he was frequently defeated, yet, by his admirable manœuvres, the result of the campaign was entirely favourable to the Americans, and injurious to the British.

Greene attacked the enemy at Eutaw Springs, September 8th, and completely defeated them, killing and capturing eleven hundred of their best soldiers. In pursuing the enemy, one Manning found himself surrounded by them. He seized upon a small British officer; and, being himself a stout man, placed him on his shoulders and retreated, the English not daring to fire at him. The little officer was horribly frightened, but Manning took good care of him.

The war was closed by the capture of Cornwallis, at Yorktown, on York River, Virginia.

PHILOLOGICAL.

"IS BEING."

"Is Henry at home?" I inquired the other day, as the servant answered to the bell. "No, sir, he *is being shot!*" was the astounding reply. "Being shot, do you say? for what and where?" "I don't know, sir, he *is* only *being shot.*" "What do you mean? do you speak the truth? where's your master?" "Well, he's not at home, but I expect he *is being* come." "And is your mistress away too?" I proceeded, prodigiously alarmed. "Oh no, sir, *she is* up stairs *being sewed.*" "Well, this is all very singular; show me up, you ——." Behold, I found the lady of the house, very quietly *sewing* in her chamber. "Madam," said I, "pray, tell me, where is Henry?" "He *is being* shot, to-day, sir," was the gay reply. "But, pardon me, madam, you seem to act very carelessly in view of such an awful event! how is it? do I comprehend you?" "Why, sir, I take it there is no harm in Henry's *being shot*—you betray a needless anxiety about it, sir—perhaps you do not understand me—to speak *vulgarly*, Henry has gone a shooting to-day, sir." "Ah, that solves the painful mystery—what a vast difference between one's *being shot*, and one's *shooting!* why such perplexing, such unmeaning language, madam?" "Why, it is the fashion in our higher circles so to speak." "Deliver me then to the language of the *lower circles*, at any rate, the language of common sense. Have you heard recently from your sick cousin?" "She was quite unwell, yesterday, sir, and last evening it was thought she *was being dead.*" "Dead? ah, you mean it was thought she was dying?" "Surely, sir." "Madam, I dislike such miserable language; good morning." "But, sir, you *are* not *being gone* so soon?" "Good morning, madam."

Such is the contemptible use that is made of the words "is being," even in professedly "good society." But we cannot conceive how such contradictory language can be reconciled with any rules of grammar or propriety. When we wish to speak of an unfinished performance, to say that it *is being done*, is to use language that means literally precisely the reverse. For *being* signifies a present existence, invariably, and *done*, a past or finished performance; the first is a present, and the last a past participle, and both applied in the same expression to a certain performance, mean, that the performance having been finished, is actually in being or existence. How absurd then to use this language, which either means nothing at all, or precisely the reverse of what is intended. Our language allots a present participle, which does certainly answer generally to convey our meaning in all cases when we refer to our unfinished performance. The participle ends in *ing*. People should not be governed in their selection or use of language, by the general custom of newspapers. We have frequently seen newspapers brought in as the umpire to settle a philological dispute. Now the fact is, that editors of newspapers seldom write grammar, and much less rhetorick. Their errours are called by no harsher name, than editorial *inaccuracies*.

"TALENTED."

We do not strenuously object to the use of this word, since custom has so long sanctioned it. But *talentful*, is evidently the proper part of speech to be used in this sense. Were it not for euphony, we know not why this term should be applied to a man of talents, any more than *witted*, should answer to a man of wit, or *judgmented* to a man of judgment. It seems rather a barbarous license to form a participle passive from a noun. Is not *skilled* liable to the same objection? *Eventuated is* certainly a barbarism. But does not Mr. Irving use *eventuate?* We call these innovations, and innovations will inevitably corrupt the language, when they are made merely to suit individual convenience or caprice.

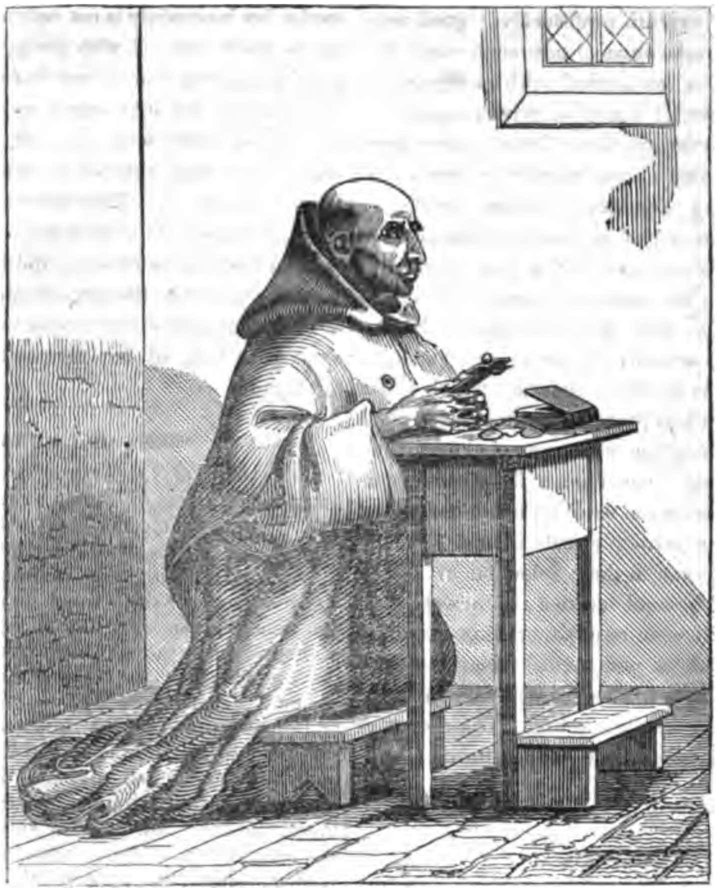
THE JACK DOWNING AND DAVID CROCKETT TASTE.

We think the favour which is and has been shown to this taste for several years past in polite circles, and even in the higher branches of our literature, should not only be discouraged, but greatly deprecated. It is certainly not a good taste; it is a vulgar taste, a taste that delights in *slang;* a slang that is both inelegant and unmeaning. Its effect on our literature is only evil, and that continually; for it brings no commuting benefits. It is introduced into our higher periodicals, reviews, and substantial works, but it certainly is not refining them. Already are we justly charged with smuggling slang into England in a mixture with our finest works: and the complaint is, that it is seized upon as novelty there, and incorporated with English literature, with no other effect, than that of inevitably corrupting the English language. This is the consequence of this taste; it vulgarizes us at home; lessens our worth even in our own estimation, and brings ridicule and disgrace upon our literary character abroad. Why not discountenance it therefore in polite circles, and expunge it from all our compositions that lay claim to elegance?

ABBEY OF LA TRAPPE.

The Abbey of La Trappe is situated thirty-four leagues northwest of Paris, in a valley of Normandy. It was founded in 1140, and derived its name from its impervious situation. It was not approached by any regular path; and, being placed in the gloomiest recesses of a deep wood, its access was difficult, and almost impossible, to a stranger. The conduct of the monks in the sixteenth century procured them the appellation of the "Bandits of La Trappe," and we may therefore readily suppose that all the energy and perseverance of De Rance were required to effect their reformation. At the Revolution the Trappists were compelled to leave France; but at the Restoration their religious houses were restored to them, and they now possess several establishments in that country. There exists, also, a female convent, in which the poverty, the mortifications, and labours of the order are strictly enjoined and practised. In their convents no sound of social intercourse is heard beyond the salutation, "Memento mori!" (Remember death.) No news from the busy world reaches the inmates. Death and works of penitence alone occupy their thoughts; and each day, we believe, they are accustomed to scoop out a portion of their last narrow resting-place.

A traveller, who visited, a few years ago, one of the establishments of the order in France, in the department of the Landes, has written an interesting description of its appearance, and the habits of the brotherhood. The "Landes" is the name given to a vast uncultivated wilderness in the south of France, on the confines of which the convent was situated. For some miles before reaching it, the way passed through a sort of composite country, made up of woods and thickets, enlivened here and there by small green glades, where springs, or splashes of rainwater, had coaxed up the scanty vegetation; or where some more vigorous pine, peering above its neighbours, had bereft them of their fair portion of light and air, and thus created a space in which it reigned pre-eminently picturesque, with many a naked and sapless branch contrasted with the masses of its dusky foliage. Emerging from thence, the eye rested on the boundless horizon of Les Landes; on which, like gigantick cranes, or herons, in the distance, shepherds were seen, in the costume of the country, stalking about on elevated stilts. At length, on a small piece of common ground, appeared a low wall, surrounding a comfortless, dilapidated-looking structure, comprising the convent and out-buildings. Universal still-



A MONK OF LA TRAPPE AT HIS DEVOTIONS.

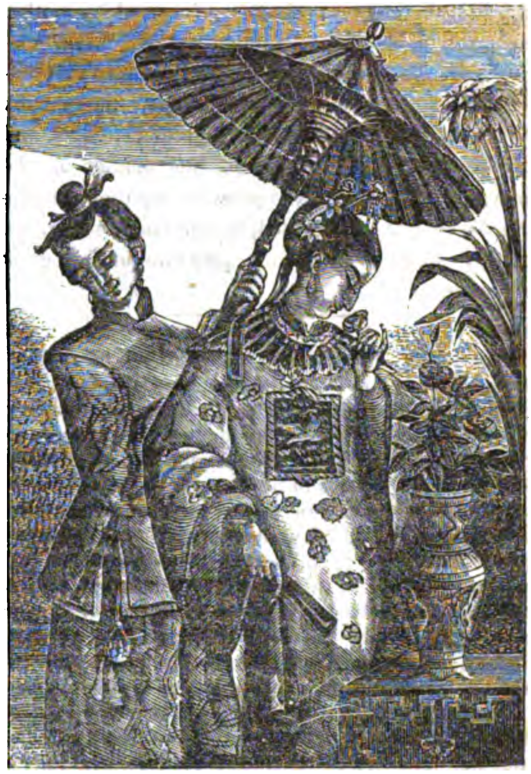
ness reigned around, interrupted only by the tinkling of the porter's bell, announcing to the inmates the approach of strangers. No bustling footsteps, no hum of voices, betokened an immediate answer to the summons; but in process of time, the visiters espied, through a chink in the door-way, a figure descending a flight of steps, and approaching slowly, with his head bent towards the earth, across a spacious court, half overgrown with weeds and rank grass. At length the key grated in the lock, and the gates, turning upon their hinges with a corresponding solemnity, admitted the party, before whom the figure they had seen prostrated himself: after which, on requesting an audience with his Superiour, he bowed consent, and slowly waving an arm terminating in a bundle of emaciated and bony fingers, silently led the way. As mass was performing, the visiters were directed to a small chapel, in which the whole community was assembled, consisting of about half-a-dozen monks in dark-brown robes and cowls, a few noviciates in white woollen vestments, and three in black who were temporary boarders on a penitentiary visit. The walls of the chapel were simply whitewashed, and the wood was unpainted;—it was almost a caricature of simplicity. The Superiour was kneeling at an altar, nearly as primitive as the rest of the structure, and for a time there appeared no prospect of coming in contact with him. All and everything was noiseless and motionless,—lips spake not, eyes looked not, hands stirred not; when lo! in an instant, the dead silence was broken by a torrent of words, streaming forth from the Superiour's mouth with a garrulous rapidity, equally monotonous and unintelligible, and as if the tongue had no other object in its vibrations than to make the most of its brief moments of liberty. Of the nature, language, or meaning of this burst of articulation, no idea could be formed; and they waited patiently till, having run itself down like the rattle of an alarum clock, it stopped. Silence again ensued for a short time, when the service ceased, and the noiseless congregation by degrees dropped off. While waiting for an opportunity of introducing themselves to the chief, our travellers followed two or three of the brothers into a small room, and ventured upon a few questions, to which no answers were given, though they were evidently disconcerted, and each eyed and pointed to the other as a hint that the individual thus designated should be the spokesman. Not unwilling to press for an unnecessary infringement of the rules, they retired, and fortunately met another whose scruples were not so insuperable, but his speech was so measured and vague, that it might have admitted a doubt whether he was in actual possession of either his wits or words. Having apologized for the intrusion, the threadbare state of his raiment, and certain other causes which rendered a windward position with respect to his person preferable to what sailors would denominate "hugging him under his lee," led to a question or two relative to change of linen and cleanliness:—"Apparently you are not accustomed to change your dress?" "Never,

never," was the answer, in a drawling, sepulchral tone. "Apparently, also, you never wash yourselves?" "Never, never," he said again; and certainly, as far as externals went, there was symptomatick evidence of his speaking the truth, the whole truth, and nothing but the truth, though the party were subsequently assured by the Superiour that an under-garment (which or what garment could not be ascertained) was changed once a week, and that washing was not a prohibited luxury.

The Superiour himself was a Spaniard by birth, and, judging from his countenance and manner, a second Loyola in character. He was enthusiastick of course, but shrewd and intelligent, and full of energy, and it was evident he had within him wherewithal to play a conspicuous part in the scene of life had he been brought up under more favourable circumstances.

From a copy of the rules which the travellers saw, it appeared that the hour of rising both in winter and summer was half-past one o'clock, and, on certain specified days, at midnight; to which is added the incomparable luxury of sitting bolt upright for several successive hours on a hard-bottomed bench. The diet consisted of roots and vegetables, rice, and a few similar articles, but never either of fish or eggs, and cheese and milk only on rare occasions. Three hours' daily labour was required of each member. The vow of obedience is so strictly enforced, that in no case is it even permitted to an innocent party to exculpate himself from any fault with which he may be unjustly charged. If indisposed, and required to take medicine, the sick man must at once swallow the draught which is presented to him, as the exhibition of a preference for any particular mendicament is considered a mark of sensual indulgence, and in point of sinfulness ranked with the desire to partake of meat, to vary the accustomed regimen of the order, or the hour at which it is usual to serve up their repasts. Notwithstanding the apparent absence of temptation which there must be in such a place, there is, nevertheless, a rule prohibiting any admission into the kitchen. The comforts of the fireside may be enjoyed under some restrictions and prohibitions. Shoes or slippers, however, must not be taken off for the purpose of quickening the circulation in a pair of frozen extremities, and the fire is to be kept at a respectful distance. All social ties must be dissolved on entering the convent-walls, friendship being termed "a pagan virtue;" and in relation to social intercourse it is observed,—one of the greatest obstacles to the judicious employment of time is the habit of paying and receiving visits; and the rule which prohibits the brethren visiting each other in their respective cells is lauded as a peculiar specimen of wisdom. The intellectual gratifications, which it might be imagined would be liberally encouraged, are not less circumscribed than the sphere of their bodily enjoyments. The library was of the most meager description; but yet no book could be obtained from it but with the sanction of the Superiour, whose liberality in this respect was not very freely exercised. The rules observe that nothing is more pernicious than the perusal of works which are not inspired by the Holy Ghost, and that one of the deplorable abuses of the age is the practice of making use of profane works in the education of youth. The only visible approach to utility in connexion with the establishment was a school, in which a few little children were taught the use of their mother-tongue by one of the order.

The following appropriate reflections conclude the account from which we have borrowed the foregoing details:—"My heart sickened as I turned away from the convent gate, and pondered on the melancholy mummery and strange unsuitable garb in which religion, the greatest boon of God to man, is so often arrayed! and by those too, whose duty and profession it more peculiarly is to invest it with attractive rather than repellant qualities. And yet I parted from these monks with mingled feelings of regret and respect for men who, with such palpable sincerity, sacrificed so much of the present to the future; with all their faults I could not but respect them still."



CHINESE LADIES OF RANK.

The chief distinction between the ladies of rank in China and the inferiour women, is, that the former are allowed superiour privileges and are indulged in certain peculiarities of dress. They are as much the slaves of their husbands and masters as the inferiour grades, and cannot be said to be endowed with any more intelligence. Their *superiour* privileges consist in being allowed so many fans, moscheto switches, and toilets; sedan chairs, dresses, &c., according to their rank. When they go out, they walk without any covering on their heads, and are obliged to be accompanied by a slave, who holds an umbrella over her mistress' head, and attends to her wants. They pride themselves in wearing the most gaudy silks, and cover themselves with the most odoriferous perfumes. Another very peculiar distinction is, that they permit their finger nails to grow very long, so that they shall not be suspected of performing any labour. Their nails grow sometimes to the enormous length of several inches, and they are careful to protect them with sheaths made of bamboo. They pride themselves much in exhibiting small feet; yet the painful and unnatural process which they undergo to render them small, so completely cripples them, that they can scarcely walk otherwise than on their heels. A description of the process and its origin, we have before given on page 153. A widowed lady of rank never marries a second time. When a female is raised to the rank of empress, the emperour makes an appeal to mother earth, the ancestors and ancient sages. "Her majesty goes out at the door of compassion to the outside of the gates of perpetual fidelity: the musick strikes up, she performs some courtesies, bows, and receives the high dignity of the mother of the country." Her majesty, however, together with the princesses, and her kindred, become mere machines, entirely subservient to the pleasure of the great emperour.

Hunting the Wild Hog in Trinidad.—The sport attended with the greatest interest and excitement in Trinidad is the chase of the piccari or wild-hog, known in the island as the quainc. A species of these that run in large droves, denominated by the Spaniards as *puercos bravos*, are in no small degree formidable.—Instead of trying to escape by flight, they turn to attack the hunter and his dogs: the latter are soon torn to pieces if they do not effect a speedy retreat. In this case, the hunter immediately climbs some tree with low branches, just high enough to protect his legs from the tusks of his swinish opponents; and from this position, with lance or gun, he kills as many as are within reach.

Should the herd, much enraged, persevere in detaining him longer than agreeable in his safe position, he has only to shoot the leader (generally a large-sized boar, whose voice and signal are always obeyed by the rest of the herd), upon which the whole drove immediately run off. Simple as this sport may appear, much excitement and some danger attend the pursuit. Cases have occurred where a hunter, from over-eagerness, or the breaking of the branch on which he is seated, has been precipitated to the ground, and torn to pieces by the enraged and voracious animals.

When, however, a single hog or even two are run to bay by the dogs, the hardy sportsman, cutlass in hand, advances upon him, when the animal immediately makes a furious charge at him, but is stopped by an adroit blow from the cutlass, well laid on, over the snout a little below the eyes, which has the effect of stunning him, when he is easily disposed of by one or more cuts on the back or neck.

Some degree of coolness and dexterity are necessary to the accomplishing this operation successfully, as, if not stopped effectually by the first blow being well laid on, and on the exact spot, the porcine foe will assuredly use his sharp tusks on the hunter's lower extremities, to their great detriment, and perhaps render him unable to walk home. Those accustomed to the sport seldom or never miss the first blow, which decides the victory.

Life, and its End. Remember for what purpose you were born, and through the whole of life, look at its end; and consider, when that comes, in what you will put your trust? Not in the bubbles of worldly vanity; it will be broken: not in worldly pleasures; they will be gone: not in great connexions; they cannot serve you; not in wealth; you cannot carry it with you; not in rank; in the grave there is no distinction; not in the recollection of a life spent in a giddy conformity to the silly fashions of a thoughtless and wicked world; but in that of a life spent soberly, righteously, and godly in this present world.—*Bishop Watson.*

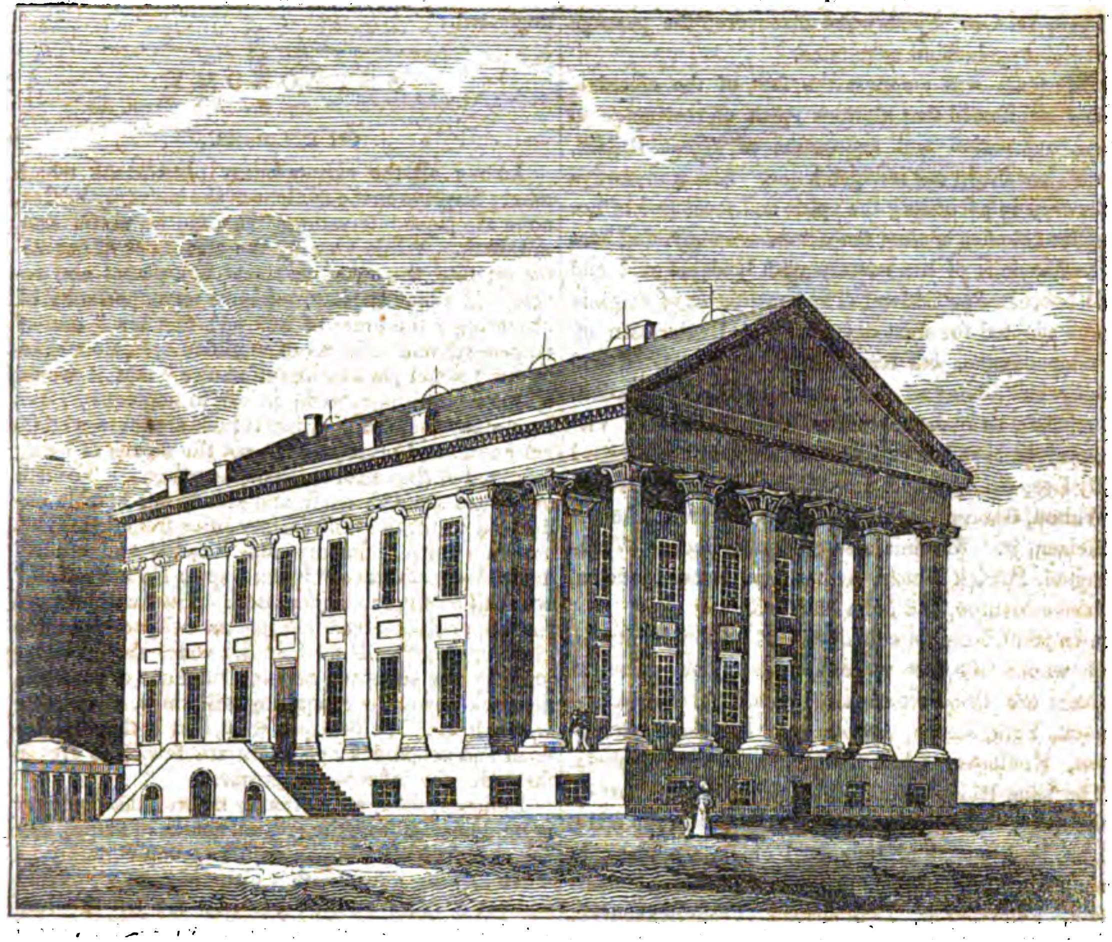
The sphere in which we move, and act, and understand is of a wider circumference to one creature than to another, according as we rise one above another, in the scale of existence; but the widest of these our spheres has its circumference.—*Addison.*

Truth is the most powerful thing in the world, since fiction can only please by its resemblance to it.—*Shaftesbury.*

MECHANICKS' INSTITUTE FAIR.

The Mechanicks' Institute of the city of New York, was incorporated in 1833. Its object is the general improvement of that essential portion of our citizens, the mechanicks, and the encouragement of the mechanick arts. It numbers six or seven hundred members, has a very respectable library and reading room, to which the members have access at all times. Thus far it has met with gratifying success, and has exerted a highly beneficial influence upon the class it designs to improve.

The first Fair of the Mechanicks' Institute was held at Castle Garden, from Sept. 29, to Oct. 3. It was highly gratifying to all the friends of the Institute, and satisfactory to the numerous visiters. Several hundred entries were made, and a very great number and variety of articles exhibited. Many new and very useful inventions were exhibited, some of them of a very important character; a variety of fancy articles and ornaments, and some very beautiful furniture. The whole presented to the visiter a real view of the present actual advanced state of the mechanick arts amongst us, and filled every American beholder with admiration at the triumphant ingenuity of his countrymen.



THE CAPITOL OF VIRGINIA, AT RICHMOND.

Under the auspices of James the First, of England, who had granted letters patent to the London and Plymouth companies, for the purpose of founding a colony in North America, Christopher Newport, sailed from London on the 20th of December, 1606; and after a disastrous passage of four months, entered the James river, and made a settlement upon its banks about forty miles from the sea, and called it Jamestown. This was the first permanent settlement that was made by the English in Virginia, although previous attempts had been made. The company consisted of 105 persons, and very soon received an accession to their numbers, swelling the amount to 200. The most difficult man amongst them, was Captain John Smith, whose name, it will be recollected, is identified with that of Pocahontas, the Indian girl who saved him from the barbarity of Powhatan. In 1614, Captain Smith explored the country, and made a map of it, which he presented to Prince Charles. In 1619, 150 women were sent to Virginia, and sold to the planters for about 150 pounds of tobacco, each; tobacco being then valued at three shillings the pound. Twenty negroes, were also sold to the colonists by the Dutch about the same time, whence may be dated the commencement of the slavetrade in this country. Virginia progressed, by no means rapidly or prosperously, under the various governours sent out by the British Crown. Their chief export was tobacco. None of the colonies suffered more than Virginia from the despotism of a royal government. In violation of chartered rights, the colony was divided into parts, and conveyed away by proprietary grants; not grants of woodlands and wildernesses, but of plantations that had long been cultivated under the encouragement of kings and charters. These oppressions produced a notable rebellion in Virginia, during which, great outrages were committed, and Jamestown was burned. The civil war was commenced by Col. Nathaniel Bacon, and terminated at his death. In 1712, Virginia was divided into 49 parishes, and a clergyman allotted to each, with stated salary. In 1713, Lt. Gov. Spottswood discovered the passage of the Appalachian mountains.

Virginia was amongst the first of the colonies, that manifested that glorious spirit of resistance to the oppression and aggression of Great Britain, which wrought our independence. She was always forward in seconding the spirit and measures of her sister colonies against the common enemy, and met the demands of her country with laudable zeal and disinterested patriotism. The constitution of Virginia was adopted the next day after the Declaration of Independence, but has been recently revised and amended. Nine of the signers of the declaration, including its immortal author, were natives of Virginia, viz. :—Thomas Jefferson, John Penn, Richard H. Lee, Fr. Lightfoot Lee, Carter Braxton, George Walton, George Wythe, Benjamin Harrison, Thomas Nelson, jr. Virginia also produced George Washington, Patrick Henry, Arthur Lee, James Madison, James Monroe, and John Marshall.

In 1830, Virginia contained 1,211,405 inhabitants, of whom 469,759 were slaves. The principal rivers are the Potomack, Shenandoah, Rappahannock, York, James, Appamattox, Elizabeth, Staunton, Kenhawa, Ohio, Sandy, and Monongahela. The Blue Ridge extends through the central part of the state, and there are other mountains in the state. Iron, lead, coal, limestone, and chalk, are found in abundance. The chief towns are Richmond, Norfolk, Petersburgh, Lynchburgh, Fredericksburgh, Winchester, Portsmouth, Williamsburgh, and Shepherdstown. The university of Virginia is established at Charlottesville, besides which there are several other colleges.

Richmond, the largest city in the state, and the seat of government, has a population of 16,000, and is situated at the head of tide water on the James river. The town rises gradually from the river, and with its many elegant brick houses, presents a fine appearance. The publick buildings are a courthouse, a state prison, an almshouse, a museum, eight churches, and the CAPITOL. We have presumed that the engraving would furnish the reader a better idea of this elegant structure, than any mere written description. It is appropriated chiefly to the purposes of the state, senate, and assembly. It stands on the highest ground in the city, and the views from its top are extensive and interesting. This city is one hundred and twenty miles from Washington, and one hundred and fifty from the mouth of the river. There are two bridges across the river at this place, and falls a short distance above. A canal has been dug around the falls, however, so that a continuous boat navigation is secured for two hundred and twenty miles. Richmond is a thriving town in point of trade, and the means of general education are not neglected.

ASTRONOMY.

ON ECLIPSES.

Among all the extraordinary phenomena which nature displays in the motions of the heavenly bodies, none are more interestingly sublime or useful than ECLIPSES. While viewing the movement of our sister satellite, the moon, as round our planet she revolves in silent majesty, we have an opportunity of observing "the order of heaven's first law," and of witnessing that order so exemplified before our eyes in the "grand planetarium of nature," that it would be the basest ingratitude in us to neglect it. Yet how many thousands of individuals are there who do not know, and perhaps have not the means of being informed of the cause of these phenomena. To such our pages are addressed, and should our humble endeavour to lift the veil of superstition from their eyes, waken a spirit of inquiry into "cause and effect," and a desire to trace "Nature up to Nature's God," we shall be amply compensated. They will no more feel superstitious fears during an eclipse, no more close up their wells for fear the water should be injured by the supposed noxious influence of some demoniack power; but inquiring will know, and seeing will believe. We however trust, that in this enlightened and scientifick age, there are few who are so far under the influence of errour.

Eclipses, then, are perfectly natural, that is, there is no deviation from the general course of nature, and are to be calculated upon with as much certainty as when *striking* a flint with a piece of *iron*, we expect and see a *spark* of fire; but they are not the less wonderful; for though in each we see the *second cause* and the *effect*, (in the eclipse of the sun, the intervention of the moon between the sun and the earth, and consequent eclipse; and in the striking of the flint, the spark—produced by the friction *melting an atom* of the iron into liquid fire,)—*still* we do not see, but are left to wonder and admire, the *First Cause*; and, to a *philosophick eye*, the fire from the flint is as wonderful as the eclipse.

Eclipses are occasioned by one heavenly body intervening between the sun or source of light, and another heavenly body; and, as regards our earth, are either solar or lunar eclipses. It is to be a *solar eclipse* when the sun is eclipsed; and a *lunar eclipse* when the moon is eclipsed. For the *sun* to be eclipsed, the moon must be between the earth and sun, in a direct line, or within 17 degrees of the *nodes* or points, where the moon in her course crosses the orbit of the earth. And for the *moon* to be eclipsed, the earth must be between her and the sun, in a direct line, or she must be within 12 degrees of her nodes. In order to explain this more fully to our readers, we have presented them with a diagram of eclipses, showing the relative positions of the sun, earth, and moon, during a total or partial eclipse of the sun, and also during an eclipse of the *moon*, which we shall endeavour to describe.

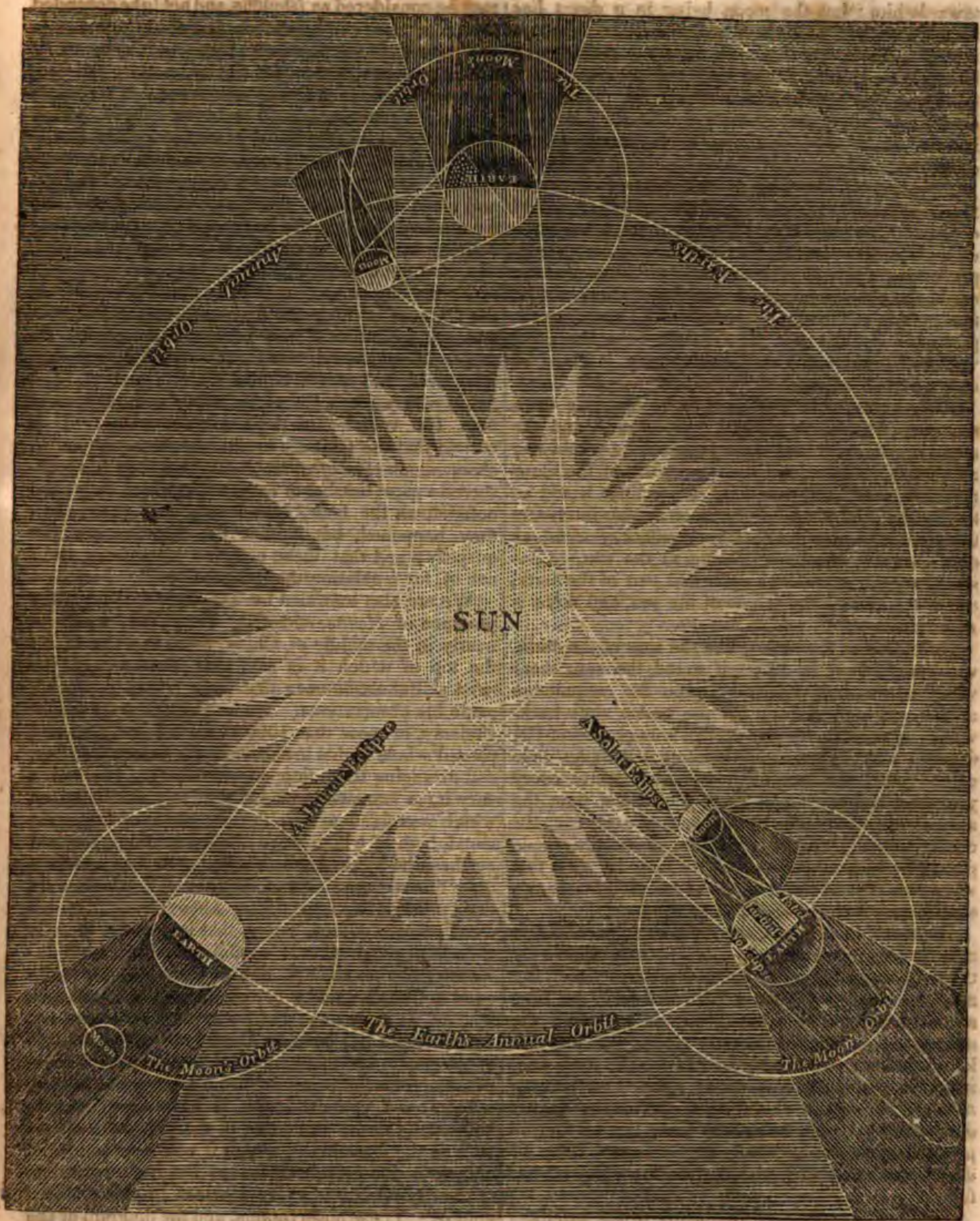


Fig. 1, represents the earth in her orbit, and revolving on her axis, with the sun shining full upon half of her globe—as shown by the part shaded light—and casting a shadow and penumbra behind her. The moon is also in her orbit, with the sun shining full upon her surface. She is represented to be so far above the *nodes*, or points where her orbit intersects the orbit of the earth, that she does not prevent the sun's rays from falling upon the earth, but casts her shadow and penumbra quite in another direction; and only a portion of her disk appears illuminated.

Fig. 2, represents an *eclipse of the moon*, occasioned by the coming in a *direct line between* the sun and moon, thereby preventing the sun shining upon her; the earth casting a large umbra and penumbra behind it, in which the moon is *enveloped*, and consequently appears dark when viewed from the earth.

Fig. 3, represents what is generally termed *an eclipse of the sun*, but what is in fact *an eclipse of the earth*; and, in order to explain this more correctly, we are supposed to be observing the same from a *point* on the *earth* marked "*total*;" the sun shining upon that part of the surface of the moon which is towards him: but the moon being in a *direct line* between *the sun*, and the point marked "*total*" on the earth, intersects the sun's rays (as represented by the lines passing to the sun), and prevents them falling on that part of the earth: consequently, an observer standing there cannot *see the sun*; and the sun is, as regards *that part* of the earth, *totally eclipsed*.

An observer standing on that part of the earth represented by the point marked "*partial*," would only see a *partial eclipse*; the moon not being in a direct line between that part and the sun, but merely preventing a *portion* of his rays from falling upon the earth, the observer would be prevented from seeing that portion of the sun obscured by the moon, as represented by the *two lines* drawn from the point "*partial*" to the sun; and consequently, it would be only a *partial eclipse*.

If the observer be supposed to be standing upon that part of the earth marked "*no eclipse*," and the moon remaining in the same position, he would see no eclipse, (although on the other parts of the earth marked "*total*" and "*partial*," the eclipse would be total and partial,) because the moon neither intersects the sun's rays, nor the observer's *points of sight*, as also shown by the lines running to the sun. Consequently the sun shines upon that part of the earth, the observer sees the whole of the sun, and there is *no eclipse*.

If the line of the nodes, like the axis of the earth, was carried parallel to itself round the sun, there would be just half a year between the conjunction of the sun and nodes; but the nodes shift backwards, or contrary to the earth's annual motion 19⅓ degrees every year, and therefore the same node comes round the sun nineteen days sooner every year than before. Consequently from the time the ascending node passes by the sun, as seen from the earth, it is only 173 days till the descending node passes by him again; so that we may be sure that whenever we have an eclipse above either node, we shall have *another eclipse in* 173 *days*.

By means of eclipses, the most common observer may be convinced of some very important facts. By the eclipses of the moon and sun we know that the moon passes round our earth; that from the time she is passing through the shadow of our earth she must be much smaller than our globe, and that her light is not her own, but borrowed from the sun; were it not so, she would *continue to shine when passing through the earth's shadow*, nor would she appear dark when between us and the sun; but we find, in proportion as she proceeds away from within 17 degrees of the nodes, she keeps increasing till her full.

Eclipses happen very frequently to the satellites of Jupiter, and are of great service in calculating the longitude of places on the earth. They also prove the motion of light *not to be instantaneous*, for when the earth is between the sun and Jupiter the eclipse of his satellites is found to be 8 minutes sooner than at other times; hence it takes 16½ minutes of time to go through a space equal to the diameter of the earth's orbit, 180 millions of miles in length, and consequently the particles of light fly almost 200,000 miles every second of time.

We have various accounts of ancient astronomical observations and eclipses, many of which, however, may be considered as fabulous, and not to be depended upon: as little can be ascertained of the actual state and position of our earth with respect to the heavenly bodies previous to the flood but by tradition and conjecture, which are generally erroneous. The Indian epoch of astronomy is said to be an eclipse, which took place so long as 3102 years before the Christian era: and Mr. Bailly, after considerable research and calculation, states, that a conjunction of the sun and moon did actually take place at that time. He also informs us, that the Indians at present calculate eclipses by the mean motion of the sun and moon, observed 5000 years since.

To the emperour *Hong-ti*, the grandson of Noah, the Chinese attribute the discovery of the Polestar, and the invention of the mariner's compass. *Du Halde* affirms, 36 eclipses are recorded by Confucius, who lived 551 years before Christ; and *P. Trigault*, who went to China in 1619, and read more than 100 volumes of their Annals, states, "It is certain that the Chinese began to make astronomical observations *soon after the flood*; that they have observed a great number of eclipses, in which they have noted down the hour, day, month, and year when they happened, but neither the duration nor the quantity; and that these eclipses have been made use of, for regulating their chronology."

We are also informed by Du Halde, that in the province of *Honan*, and *City Teng-foan*, which is nearly in the middle of China, there is a tower, on the top of which it is said that *Tchaon-cong*, the most skilful astronomer that ever China produced, made his observations. He lived 1200 years before Ptolemy, or more than 1000 years before Christ, and passed whole nights in observing the celestial bodies, and arranging them into constellations. He had a very large brass table placed perfectly horizontal, on which was fixed a long upright plate of the same metal, both of which were divided into degrees, and by these he marked the meridian altitudes; and from them derived the times of the solstices, which were their principal epochs. The Abbe Grosier, in his description of China, states, that in *Peking*, there is an astronomical tribunal established, having an inspector, two presidents, one of them a Tartar, the other a Chinese, and a certain number of mandarins, who act as assessors; but for more than a century, the president has been an European, and two thirds of the pupils are maintained at the emperour's expense. The following *ceremony* takes place during *eclipses*:—A communication is made some months beforehand to the emperour, of the day and hour, as well as the direction in which it will appear. The eclipse is also calculated for the longitude or latitude of the capital city of every province in the celestial empire. These observations, and the diagram of the eclipse, are preserved by the tribunal of ceremonies, and another, called the *Calao*, by whom it is transmitted to the different provinces and cities of the empire. A few days before the eclipse, the tribunal causes to be fixed up on a publick place in large characters, the hour and minute when the eclipse will commence; the quarter of the heavens in which it will be visible, with other particulars. The mandarins are next summoned to appear in state at the Tribunal of Astronomy, and to wait there till the eclipse will take place; and as soon as that begins, they throw themselves on their knees, knock their heads against the earth, and make a dreadful noise with drums and cymbals throughout the city: this ceremony is performed, with the superstitious idea of preventing the sun from being devoured by the celestial dragon. And, although the superstition is exploded, they still keep up the custom. While the mandarins are prostrate in the court, others on the observatory examine with great attention the commencement, middle, and ending of the eclipse, comparing what they observe with the figure and calculation given. They then write down their observations, seal them, and transmit them to the emperour, who meantime has also been observing the eclipse.

OF THE FOUR GREAT HISTORICAL AGES.

The four Great Historical Ages are those in which the arts were carried to perfection, and which, by serving as the era of the greatness of the human mind, are examples for posterity.

The *first* of these ages to which true glory is annexed, is that of Philip and Alexander, or more properly, that of a Pericles, a Demosthenes, an Aristotle, a Plato, an Apelles, a Phidias, and a Praxiteles; and this honour was confined within the limits of ancient Greece; the rest of the known world being then in a state of barbarism.

The *second age* is that of Cesar and Augustus (of Rome,) distinguished likewise by the names of Lucretius, Cicero, Titus Livius, Virgil, Horace, Ovid, Varro, and Vitruvius.

The *third age* is that which followed the taking of Constantinople by Mahomet the 2d; when a family of private citizens was seen to do that which ought to have been undertaken by the monarchs of Europe

The Medicis invited to Florence all the learned who had been driven out of Greece by the Turks; this was the age of Italy's glory.

Here the polite arts soon recovered a new life. The Italians honoured them with the title of *Virtu*, as the first Greeks had distinguished them by the name of *Wisdom*.

Every thing now tended towards perfection; a Michael Angelo, a Raphael, a Titian, a Tasso, and an Ariosto flourished. The art of engraving was invented; elegant architecture appeared again as admirable as in the most triumphant ages of Rome; and the Gothick barbarism, which had disfigured Europe, in every kind of production for a thousand years, was driven from Italy to make way for the arts, sciences, and good taste.

The arts, being again transplanted from Greece to Italy, were again cultivated there with great success.

The Italians alone, for a long period, kept possession of every thing that was beautiful, except musick, which was then in a very rude state, and experimental philosophy, which was everywhere equally unknown.

The Last and *Fourth Age*, which includes the present period, is that known by the name of the *Age of Lewis XIV*. (of France), and is that which is considered to approach the nearest to perfection. Of all the four ages, the last being enriched by the discoveries of the three former, it has done more in many things than all those put together.

The arts in general, however, have not been carried much further in the fourth age, than they were under the Medicis, Augustus, and Alexander; but human reason, as regards philosophical inquiry, has been greatly improved.

It was in the present age that we first became acquainted with sound philosophy; and which has not only reanimated all Europe, which was languishing, but also the greater part of the world. This happy influence has latterly been chiefly confined to England.

Before the age of Lewis XIV., A. D. 1643, the Italians called all the people on this side the Alps by the general name of Barbarians.

In the twelfth and thirteenth centuries, the Italians were the only commercial people of Europe. Commerce began to spread itself towards the north of Europe about the end of the thirteenth century.

HISTORY.

History, in its most extensive sense, signifies a narrative of the most remarkable events that have happened in the world, arranged in the order of time in which they were transacted—an enumeration of the causes to which they may be attributed, and the effects which they may be said to have produced.

"History," says a celebrated modern writer, "is the exhibition of man, the display of human life, and the foundation of general knowledge. It expands the ideas, enlarges the mind, and eradicates those narrow and illiberal prejudices which dim and corrupt the understanding."

By the study of History we not only gratify a laudable curiosity respecting past events, but we draw the most interesting conclusions as it regards their causes and consequences. We may trace the progress of refinement, and the gradual advance from the rudeness of savage life to the elegances of the most exquisite luxury; from the garment of skins to the embroidered and jewelled robe; from the hut of bark, to the magnificent palace, with its rich furniture and pictures; from the undisciplined rabble, armed with clubs and stones, to the gallant army, drawn up in battle array, with banners waving, arms glittering, trumpets sounding, and its proud steeds pawing the ground with eagerness for combat.

A contemplative will likewise discover, from this study, the effect which the gradual progress of refinement has on the condition of the human species, by giving rise to commerce, which opens a communication between the most distant countries on the globe, and carries on an interchange of the commodities which each country respectively furnishes, and others need.

History likewise informs, or ought to inform us, of the rise and progress of regular government, and of laws, of societies, states, and empires; of the causes of their increase, prosperity and downfall or decay; of the conquests they have achieved, and the losses they have sustained by invaders; of their internal commotions, and the influence they have exerted on the morals, manners, and happiness of the people who have been the subject of them.

Of History, there are several species:—1. *Ecclesiastical History*, or the *History of the Church* in all ages, which is important both in a religious and a political point of view.

2. The *History* of the *Arts Sciences*, on which the wealth and prosperity of States essentially depend, and the great advances in which have given modern nations so decided a superiority over the ancients.

3. *Political History*, or an account of the actions of rulers, their wars, negociations, government, and every occurrence of importance.

To enter upon the study of History with advantage, a previous acquaintance with geography and chronology is essentially necessary. Without this, History cannot be properly understood, but will present a confused mass of facts, frequently unintelligible, and from which no useful inferences can possibly be drawn.

The *History* of the *World* at large, or *Universal History*, has, for the purpose of assisting the memory, been divided into certain periods, each marked by some great event.

1. The Creation. 2. The Flood. 3. The period when History began to assume an authentick form, and to relate facts with some regard to truth and probability. 4. The conquest of Babylon by Cyrus, and the destruction of the Babylonian Empire. 5. The reign of Alexander the Great, and the overthrow of the Persian Empire. 6. The destruction of Cartharge. 7. The Christian Era. 8. The division of the Roman Empire by Constantine. 9, The destruction of the Western Empire, and the settlement of the European Nations. 10. The Mahometan Era, and the conquest of the Saracens and Turks. 11. The Crusades, and the principol events which have occurred since that time.

For a knowledge of the most important transactions which took place in the *first period*, we must refer to scripture, as there is no profane historian who gives even a probable account of that remote age.

In Genesis, we find that men lived in one society, used one language, were under a patriarchal government, lived to a great age, understood many of the mechanick arts, and the use of metals, invented musical instruments, and at length became corrupt and debauched in their morals and manners.

An account of the *second period* must be chiefly drawn from the same source. It includes the destruction of the human race by the Deluge, except Noah and his family, who were preserved in the ark; the building of the tower of Babel, the confusion of tongues, and the dispersion of mankind into different countries and different societies; the departure of the Israelites from Egypt, and their conquest of Canaan; their change from a theocracy, or government by God alone, to a monarchy; the actions of their kings and prophets, to the carrying away of the ten tribes of Israel into captivity.

From the heap of fables called Profane History, we gather something respecting the seige of Troy by the Greeks, who had in a degree emerged from barbarism, and formed themselves into numerous petty kingdoms and states.

The history of Egypt is by no means to be depended upon during this period. Tyre was an opulent, commercial city; but both Egypt and Tyre fell under the dominion of Nebuchadnezzar. Rome was founded by Romulus, B. C. 752. Europe was, during this period, with the exception of Greece, in a state of the deepest ignorance and barbarism.

The *third period* commences with the 56th, vulgarly called the 28th Olympiad, B. C. 68. And now profane history begins to assume a more credible form, though still debased by fable. The Romans were rising into notice in Italy; while in Greece the petty states of Athens and Sparta were laying the foundation of their future fame.

The conquest of Assyria swelled the Babylonian empire to a great extent, now comprehending Phœnicia, Palestine, Syria, Babylonia, Media and Persia. In the year 586 B. C., Jerusalem was destroyed by Nebuchadnezzar.

The *fourth period* of general history is short, including only thirty years, and terminating with the conquest of Babylon by Cyrus. Under Servius Tullus the Romans were now become formidable to the surrounding nations, though that prince increased their greatness rather by arts of peace than by war. At this time commenced the disputes between the Greeks and Persians, respecting the colonies of the former who had settled in Asia Minor.

The *fifth period* extends from the conquest of Babylon to the death of Alexander the Great, and the dismemberment of his vast dominions. The Jews were now released from captivity, and rebuilt Jerusalem and the temple. Cambyses added Egypt to his empire. Greece waged successful war with Persia, until, at length, the latter was entirely subdued by Alexander the Great. Rome and Carthage were making rapid advances in extent of dominion and power.

The *sixth period* is dated from the division of the vast empire of Alexander between his four principal commanders. Cassander had Macedonia and Greece; Antigonus, Asia Minor; Seleucus, Babylon, and the eastern provinces; and Ptolemy Lagus, Egypt, and the western provinces. Great revolutions, however, soon took place, and still farther divisions gave rise to the kingdoms of Pontus, Bithynia, Pergamos, Armenia, and Cappadocia. Syria and Egypt, however, continued long powerful. Rome had wars with Carthage with various success, till they ended by the destruction of the latter, B. C. 146.

The *seventh period* is remarkable for the astonishing spread of the Roman empire, which before its close, comprehended almost the whole then known world. At its commencement, Syria and Egypt were on the decline. The empires of India and Parthia, in Asia; Ethiopia, Numidia, Mauritania, and Getulia, in Africa; Gaul, Germany, part of Spain, Macedonia, and Greece, in Europe, preserved a show of independence; but they were speedily overwhelmed by the gigantick power of Rome, and fell under her dominion. In this period, Jesus Christ was born, and Jerusalem was destroyed by Titus Vespasian.

The *eighth period* commences at the death of Trajan, when the Roman empire comprehended Britain, France, Spain, the Netherlands, Italy, part of Germany, Egypt, Barbary, Biledulgerid, Turkey in Europe and Asia, and Persia.

The northern parts of Europe and Asia, however, contained many fierce and warlike nations, which even now threatened, and finally accomplished the destruction of the Roman power.

This destruction was accelerated by the removal of the seat of empire from Rome to Byzantium, by

Constantine, who named it after himself, Constantinople.

The *ninth period*, presents us with a most lamentable picture of the decline and fall of the Roman empire. *Without*, were barbarous enemies, ready to take every advantage, and to plunder and destroy without mercy; *within* were misrule and the most odious vices, both amongst prince and people; numerous pretenders to the purple starting up continually and desolating the country by civil wars; until, at length, A. D. 476, the destruction was completed by the Herculi, and Rome ceased to be an imperial city. Important revolutions also took place in Britain, France, and Spain.

(To be continued.)*

PHYSICAL GEOGRAPHY.

Of the Fossil Remains of Organick Bodies, Vegetable, and Animal.

Organick fossils may be distributed into three classes; *remains* which have preserved their natural state, at least in part; *petrified substances*, and *impressions*.

The first class consists principally of bones, and even whole skeletons, which after having been deprived of the skin and flesh that covered them, remain buried in the earth, or concealed in deep caverns. Sometimes they are calcined totally or in part, without having lost their configuration, and sometimes they retain not only their texture, but even a certain portion of skin and flesh.

Petrifactions, ordinarily, comprehend all the stony substances which have the figure of an organick body. There have been instances where a liquid impregnated with stony particles has flowed into a cavity formed by an organick body which had disappeared. In that case, the stony mass has flowed into the empty cavity, and assumed the exteriour form of the organick body which was there before. The stone becomes the statue of the substance which it has replaced. While the process of decomposition is gradually going on in a vegetable or animal substance, it is sometimes likewise surrounded and pressed on by a stony juice. As each organick particle dissolves and disappears, a stony particle replaces it. Thus, particle after particle, the stony substance gradually occupies the spaces left vacant by the progressive decay of the vegetable or animal parts; and, by being moulded in these cavities, it copies, feature for feature, the contexture of the organick body. This is the manner in which the formation of *petrified wood* is usually explained.

Metallized bodies, and those which have been changed into bitumen or into coal, may be referred to the same system of formation. Many petrifactions are, doubtless, formed by the crystallization in the earth, of the siliceous matter so abundant in many organick bodies.

Impressions are found between the laminæ of certain argillacious schists; they are the relievoes or moulds representing skeletons of animals, particularly fishes, leaves, reeds, and entire plants. In some of the Western states, impressions of human feet, have been distinctly observed. More recently, it is alleged, *turkey tracks* have been discovered in some of the schists bordering on Connecticut river in Massachusetts.

We shall now consider the different classes of fossil remains. The petrifactions of vegetables seem to belong to the quartzeous, aluminous, and magnesian schists, rather than to calcareous rocks. The petrifying substance is most frequently of quartz-agate, onyx, or jasper; but petrifactions are sometimes formed by pyrites. Some have been found with pyrites on one side, and agates on the other. Fossil ears of corn, impregnated with silver, with copper and other metallick substances have been found. Petrified fruits are very rare. They have been found on heights, where now they do not grow.

The impressions of vegetables are found almost exclusively in the marly and argillaceous schists. Those of leaves and branches are common. Some present the most delicate traces of the structure of flowers. Many fossil plants which are found in one country, are now entirely the production of a foreign country. Elastick fossil gum, said to be cahoutchouck, which grows only in Peru, has been found, it is said, in England. Pieces of indigenous wood have been found, of which one end was in a natural state, and the other bituminated.

Among the remains of the animal kingdom, *shells* and *zoophytes* are the most abundant; they occupy immense spaces, but are principally found in calcareous rocks. More than 60 genera have been found in the environs of Paris. They are often confusedly mingled with impressions of leaves, petrified wood, bones and teeth of fishes. In the Paris basin, it is a curious fact, that there are two alternations of marine and fresh water formations, in the following order, viz., lower marine, lower fresh water; upper marine, upper fresh water. This circumstance proves a difference in their age and origin. Enormous beds of shells are found in various parts of the globe, many of them several square leagues in extent, and several feet thick. These immense beds occur in the upper country of Georgia and Alabama, in Touraine in France and other places. Fossil shells of all kinds are found in almost every country and every part of the earth; they are found on the seacoast, and on the highest mountains of the interiour; on the hills and in the valleys; on the surface and at immense depths; in the torrid climate of South Africa, and in the cold of Siberia—they sometimes form a whole coast—sometimes a mountain. On the mountains near the Caspian sea, they are found above the region of the clouds; they cover the Andes of South America, at a height of 13,200 feet. In the United States, limestone, containing shells, extends with some interruptions, from the primitive rocks of New England and the eastern border of the Alleganies, to the Rocky mountains.

The remains of other sea animals are less abundant; next to the tertaceous kinds, fishes are the most frequent. They are found in almost every part of the world, occurring in confused masses of bones and shells, sometimes imbedded in a solid rock, and sometimes petrified. Amphibious animals are rarely found, and it is believed they did not exist in great numbers, till after the age in which fishes were produced. Fossil tortoises and lizards have been found in various parts of Europe, and the latter especially, in Ohio. The marine fossil animals are in a great measure foreign to the coasts of those countries where they are found buried, and generally are of species that are now unknown. It is a singular fact however, that European and American shells, known as such, have frequently been found mingled together on the coasts of Africa.

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* After concluding, in this comprehensive manner, the subject of Universal History, we intend to take up the History of the United States.

Many singular circumstances are connected with these monuments of the history of our globe. The petrified and perfectly preserved shell is often found close by the side of several others, calcined, worm-eaten, and destroyed. Here the beds of the shells lie horizontally, with the concave part uppermost, and without any foreign mixture; there these remains are found in the midst of fragments of granite, of sand, and of clay, jumbled together in the greatest confusion. Some fishes have been suddenly and forcibly enveloped in the substance which contains their impression, or their cast in petrifaction. We can still perceive the violent and convulsive contortions into which these animals had thrown themselves to escape the terrible catastrophe of which they are the monuments. Sometimes, the association of these remains with metallick ores, presents singular appearances; muscles have been found in a mine of loadstone, and petrified shells, with adhering threads of gold and silver, have been met with. They also have occurred in cinnabar, completely filled with that metal.

Thus, before our stratified mountains, and the metals which they contain, were formed, before the fragments of these mountains, united together produced rocks and earths of accumulation, the globe must have been covered in a great measure, and at different periods, sometimes with the waters of the ocean, sometimes with a body of fresh water, and lastly, with several fluids of an unknown nature, impregnated with substances which have enveloped the madrepores, the shells of marine, and of fresh water animals, and the fishes, whose petrifactions or impressions we find heaped up one above another. In the immense succession of ages which these tranquil formations required. interrupted from time to time by violent revolutions, it appears either that the mammiferous animals, the birds, and the great cetaceous animals did not yet exist, or that they existed in a situation which secured them against the effects of those catastrophes which buried the countless generations of the lesser sea animals in the bowels of the earth.

There have not, at least, been found any remains of the mammiferous, nor of the cetaceous race, decidedly covered over with a regular stony bed. A petrified buffalo has recently been found in the north of Mexico, near the United States, but it is doubtless of recent formation and near the surface. Petrifactions and impressions of birds and insects, are rare, and seldom very distinctly marked. We have seen petrified insects from Lake George, N. Y., which were very distinct. The accounts of honey-combs, petrified with bees, larvæ and eggs, found in a cavern of Upper Egypt, are very doubtful.

The remains of quadrupeds, are found accumulated in regions where similar animals do not now exist. The *megalonyx*, an unknown animal of the tribe of sloths, of the size of an ox, has been dug up in Virginia and some of the Western states; the *megatherium* is discovered near Buenos Ayres, and joins to a character resembling that of the sloth, the bulk of a rhinoceros. A fossil *unicorn* and a fossil bear it is said have been found in the caverns of the north of Europe, without any covering. The fossil elephant, which is of a kind as different from that of India and Africa, as the horse is from the ass has left proofs of its ancient existence in all Europe, in Northern Asia and the New World. The islands in the north of Siberia, it is said, are only heaps of sand, ice, and bones of elephants and rhinoceroses, mixed with those of great cetaceous animals, and even with the remains of gigantick birds. Whole carcasses of the elephant (mammoth) have been found in Siberia, covered with their flesh and skin and long hair, preserved by the frost which prevails in those regions. The remains of this species have been found in most countries of Europe, and in North and South America.

The *mastodon*, an animal nearly similar to the elephant, and which is very frequently confounded with the mammoth, has been discovered in the states of New York, Virginia, Ohio and Kentucky, and in Louisiana. There are said to be five species of this animal, one of which also has been found in the high plains of Quito, and another in France. The fossil bones of the rhinoceros, the hippopotamus, and the tapir have also been found. They generally seem, however, to have belonged to species much larger than the present known species.

We might enumerate a very great number of extinct genera of beasts, birds, and fishes, varying in size from the rhinoceros to the mouse, from a species of birds much larger than any that at present exist to the humming-bird, and from the whale to the minim, whose remains have been found in different situations and in different forms. The elk of Iceland, and the great buffalo of Siberia, may be mentioned as holding the first rank. Some of the extinct genera were of a very singular character, and entirely unlike any that now exist.

But in the midst of all these different collections of remains, human bones have never been found. They have never been found in any regularly stratified formation; nor even in the beds of diluvial earth and gravel, or among the diluvial fragments in caves and fissures They are all decidedly postdiluvian, as far as they have been hitherto discovered. The same is true of the quadrumana, including the apes and makis, animals which approach nearest to the human form. If, therefore, all these vast and various collections of the remains of organick bodies, were the effect of some singular revolution of the globe, which involved hundreds of genera in entire destruction, does it not irresistibly appear that man did not exist, at any rate in very great numbers, anterior to the last revolution of the globe? What could have involved every organick body in general destruction, but some terrible revolution, as the deluge, or a sudden alteration in the temperature of the globe? And what but a deluge could have piled together such vast heaps of marine animals on the tops of the highest mountains and covered them over with earth?

Having thus generally surveyed the series of solid substances, which form the crust of our globe, we shall next proceed to the theory of the waters which cover its surface.

CHYMISTRY.

SULPHUR.—16.

Sulphur is one of the few elements which occur in nature, in their simple form. It is a well-known mineral substance, found in large quantities in the neighbourhood of volcanoes; and, as an article of commerce, is chiefly brought from the Mediterranean. It is also extracted for use from some of its compounds. It is commonly met with in two forms —that of a compact, brittle solid; and that of a fine powder. It is of a light-yellow colour; and, when melted, emits a peculiar odour. It is insoluble in water, and tasteless. It is about double the weight of water, its specifick gravity being 1.98. It is readily melted and volatilized, and begins to evaporate at 170°, and to fuse at 105°. At 220° it becomes completely fluid; but possesses the peculiar property of solidifying at a higher degree, or at 350°, and of again melting by a reduction of temperature. It sublimes (this term is used to denote the evaporation of a solid) at 600°; and condenses into the form of a powder, or, as it is termed, of *flowers*. When poured into water, in the state of complete fusion, it becomes of the consistency of wax, and may then be used for taking impressions from engraved stones, and hardens upon cooling.

Sulphur is completely soluble in boiling oil of turpentine, and in alcohol, when the two substances are brought in contact in the state of vapour. It is inflammable; that is to say, it combines, when ignited, with the oxygen of the atmosphere with the evolution of light and heat. It burns with a faint blue light, at a temperature of about 180° or 190°; and the evolution of heat is so small, that it may be burned out of gunpowder, of which it is one of the principal ingredients, without inflaming it. At a temperature of 300°, however, its combustion is more rapid.

SULPHUR AND OXYGEN.

Sulphurous acid.—32. When sulphur is burned in dry oxygen-gas, there is no increase in volume; but at common temperature and pressure, a colourless transparent gas is formed, which is distinguished from all other elastick fluids, by a suffocating pungent odour, well known as the smell of burning brimstone. It may be obtained by the action of sulphurick acid upon mercury, in a state of great purity. The mixture may be put into a retort and heated, but the gas must be received over mercury.

It is called sulphurous acid gas.

It extinguishes all burning bodies, when immersed in it, and cannot itself be burned. It is instantly fatal to animal life. It assumes the liquid form under a pressure not exceeding that of two atmospheres; or at the degree of cold produced by a mixture of snow, or pounded ice, and salt.

It first reddens blue vegetable colours, and then destroys them; and its bleaching powers are very considerable. The vapours of burning sulphur are much used in whitening silk and straw-work.

One hundred cubick inches of sulphurous acid weigh 67.5: which is exactly double the weight of an equal quantity of oxygen; so that the weights of sulphur and oxygen, in the compound, are equal; and, as there is reason to suppose, from data which will be hereafter specified, that it is composed of two equivalents of oxygen and one of sulphur, the number of the latter must be 16.

Water at 60° dissolves about 33 times its bulk of sulphurous acid; and the solution possesses its peculiar odour and taste, which is astringent. It cannot, however, be preserved any length of time without change.

Sulphurick acid.—40. A mixture of sulphurous acid and oxygen gas may be kept for any length of time without showing any further disposition to combine, provided they are quite dry. If water be present, the sulphurous acid will gradually unite, with a further proportion of oxygen, and the compound, which is sulphur*ick* acid, will be taken up by the water.

Sulphurick acid is an article of great importance, and is largely consumed in many manufactures; and there are several ways of procuring it for commerce.

By distilling, at a high heat, the salt called green vitriol (which, it will be hereafter seen, is a compound of sulphurick acid and protoxyde of iron) a dense, oily, colourless liquid may be obtained; which emits white vapours on exposure to the air. If this liquid be again distilled, at a lower temperature, into a receiver surrounded by pounded ice or snow, a transparent, colourless vapour will pass over, which will condense into a white crystalline solid. It is tough and elastick; liquefies at a temperature of 66°, and boils at about 110° or 120°. It has a strong affinity for water, and immediately takes it from the atmosphere. This solid body, there is reason to suppose, is pure anhydrous sulphurick acid; but there are some doubts respecting its nature.

The residue in the retort will be no longer fuming, and is the common oil of vitriol of commerce.

Hydro-sulphurick acid is also largely obtained by burning a mixture of about 8 parts of sulphur and 1 of nitre, in close leaden chambers, containing water. The fumes, as they rise, are dissolved; and the acid is procured in a concentrated state by evaporation of the solution. The hydro-sulphurick acid, or oil of vitriol, is a colourless oily fluid, of a specifick gravity, when most concentrated, of 1.85; at which density it contains about 81 per cent. of real acid. It boils at 620°, and freezes at 15°. It rapidly absorbs moisture from the air, and may be mixed with water in any proportion above that just stated.

It is acrid, caustick, and intensely sour. It decomposes animal and vegetable substances rapidly; probably from its great affinity for water, which is an essential ingredient of their composition, and charcoal is produced. It often derives a brown tinge from small particles of this nature falling into it. It reddens blue vegetable colours, even when very largely diluted. When sulphurick acid is passed through a porcelain or platinum tube, heated to redness, it is decomposed, and two measures of sulphurous acid to one of oxygen are obtained. Its composition is therefore,

1 equivalent of sulphur - - - -	16
3 ditto of oxygen - - - -	24
	—
and the number of anhydrous acid is -	40
	—

If we add to these proportions 1 equivalent of water, we shall have for the composition of the hydro-sulphurick acid,

1 equivalent	of sulphur	- - - -	16
3 ditto	of oxygen	- - - -	24
1 ditto	of water	- - - -	9
	and its number is	- - -	49

in which the water is in the same proportion, 19 per cent., as in the acid of the specifick gravity 1.85.

Hypo-Sulphurous Acid.—24. When iron filings are digested in a solution of sulphurous acid, they are dissolved without effervescence; the iron takes half the oxygen from the sulphur, and an acid is formed with the other half, which combines and forms a salt with the oxyde of iron so produced.

This acid has been called the *hypo*-sulphurous, upon the principle of nomenclature before explained. It cannot be exhibited in a separate state; for at the moment of quitting the base with which it is united, it is resolved into sulphurous acid and sulphur. It is a compound of

1 equivalent	of sulphur	- - - -	16
1 ditto	of oxygen	- - - -	8
	and its number is	- -	24

Hypo-Sulphurick Acid.—72. By passing sulphurous acid through water, in which finely-pounded peroxyde of manganese is suspended by agitation, the peroxyde yields part of its oxygen to the acid, and converts one portion into sulphurick acid, and another into a peculiar acid, which has been called the *hypo-sulphurick*. The process for exhibiting the latter, in a separate form, is complicated, and we shall for the present postpone its consideration.

It is obtained in a liquid form, it reddens litmus paper, but has no smell, by which it is distinguished from sulphurous acid; and it forms soluble salts with oxyde of lead, and other substances, whose combinations with sulphurick acid are insoluble.

The results of its analysis show it to be a compound of

2 equivalents	of sulphur	- - - -	32
5 ditto	of oxygen	- - - -	40
	and its number is	- -	72

SULPHUR AND HYDROGEN.

Sulphuretted Hydrogen.—17. By repeatedly subliming sulphur in hydrogen gas, a combination between the two elements takes place, without change of volume; and a gas is formed, to which the name of sulphuretted hydrogen has been given. It may be produced in abundance, by acting upon sulphuret of iron (which may be formed by melting together sulphur and iron filings) with sulphurick acid. It is quickly absorbed by water, but may be collected in glass bottles filled with that liquid, and provided with glass-stoppers, which must be inserted the moment they are filled with the gas.

It is colourless and transparent. Its smell is very offensive, and resembling that of putrefying eggs, or the washings of a foul gunbarrel; its taste is acid.

It is highly poisonous, and a horse has been known to perish in an atmosphere which contained no more than 1-250th part of it.

It is inflammable; and, like hydrogen, burns either silently, or with explosion, according to the circumstances of its mixture with oxygen. It instantly extinguishes all burning bodies.

It tarnishes silver, gold, and mercury, and blackens white paint made with preparations of lead. Its solution in water acquires the taste and peculiar smell of the gas, and reddens blue vegetable colours. Some mineral waters, as those of Harrogate, are impregnated with this gas. Two measures of sulphuretted hydrogen require three of oxygen for their complete decomposition, one measure of which saturates the two of hydrogen, and the other two the sulphur; water and sulphurous acid are the products

Now, 100 cubick inches of hydrogen weigh 2.11 grains, and 100 cubick inches of sulphuretted hydrogen 36 grains; and as the sulphur is taken up by the hydrogen without change of bulk, if we deduct the weight of the latter, the remainder 33.89 will be the weight of the sulphur, and 2.11:33.89::1:16, which makes the equivalent of sulphur, as we before stated 16.

It follows also, that sulphuretted hydrogen is composed of

1 equivalent	of sulphur	- - -	16
1 ditto	of hydrogen	- - -	1
	and that its number is	-	17

Eggs contain sulphur as well as hydrogen, hence when kept too long they decompose, forming sulphuretted hydrogen, which is the odour perceived in putrefying eggs. There is no combination of sulphur and hydrogen.

BOTANY.

THE LEAVES.

The *leaves* are the *organs* by which the water, and other substances, sucked up from the earth by the root, are converted into proper food for the plant.

They are produced at the *nodi* of the stem, or of its modifications and appendages; and never on any true *root*.

In general they are green and *herbaceous*, and consist of two parts; a *stalk*, and the flat part called the *lamina*.

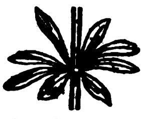
In some leaves the stalk is wanting, and then the lamina or leaf adheres closely to the stem, and is said to be *sessile*. *Ex.:* woodmint, orpine, sowthistle, catchfly, &c.

In most leaves the two sides of the lamina vary in appearance, the upper one, that turned towards the sky, or towards the stem, being smoother and darker in colour than the under. The principal vein or *midrib*, which is a continuation of the stalk, and the other veins which branch from it, project more on the lower than on the upper side, and the under side is of a lighter green and generally more hairy or downy. The different purposes for which the leaf is intended, because this variety.

Leaves generally grow above one another on the stem, but from opposite sides of it, or so that the points they spring from form a spiral line round it;

in this case the leaves are said to be *alternate*. *Ex.:* lime-tree, apple-tree, common sorrel, and most plants. It must be particularly remarked, that adjoining leaves are *never* produced immediately above each other on the stem. When the *internodia* between two adjacent leaves, which spring from opposite sides of the stem are not developed, this pair of leaves will be *opposite* each other; plants which have their leaves produced in this manner in pairs, are said to have *opposite* leaves. *Ex.:* mint, gentian, mistletoe, maple, &c.

When, instead of only two opposite leaves, three or more are produced from points forming a ring on the stem, they form a *whorl* or *verticil;* such plants as have their leaves with this arrangement, are said to have *verticillate* leaves. *Ex.:* sweet-woodruff, goosegrass, mare's tail, &c.



Verticillate leaves are considered as being produced by the non-development of several adjacent *internodia.*

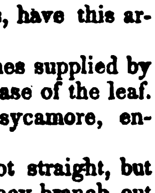
One among many proofs, that this is the real origin of these different arrangements of leaves, is afforded by the *Rhododendron ponticum*, on the branches of which may often be remarked leaves both alternate and opposite.

These distinctions of the mode of growth of leaves must be particularly remarked and understood; being of great importance to the true knowledge of the structure of plants and of their correct classification.

It is known that most parts of plants, which are not either root or stem, are leaves changed in form, texture, and colour, or *modified;* thus flowers, fruit, &c., are *modified leaves.* This will be further explained.

The arrangement of the *veins* of leaves must be noticed, as the figure and general appearance of the foliage depend on it; it is of two principal kinds, each of which characterizes one great class of plants.

1. A principal vein, called the *midrib*, runs through the middle of the leaf, generally dividing it into two equal parts. From the sides or base of this, smaller veins branch out which tend towards the edge; from these spring still finer, and so on, till the whole is divided, as it were, into a network; the meshes being filled up with a green substance.



The leaves of the elm, lime, and other timber-trees, and of most shrubs and herbs, have this arrangement of veins.

The place of the midrib is sometimes supplied by several equal veins arising from the base of the leaf. *Ex.:* the vine, currant, geranium, sycamore, endive, &c.

In most leaves, the veins are not straight, but change their direction every time they branch out into others. In the oak tribe, this is not the case; the veins proceed in nearly straight lines from the midrib to the margin. This is readily observed in the common chestnut-tree.

2. In the other mode of arrangement, the veins, instead of branching out and interlacing, as just described, run side by side, without touching, from the base to the apex of the leaf; between these, in large leaves, are to be seen finer veins running across, but not forming a network among themselves. This structure is seen in the leaves of the grasses, tulips, lily, aloe, Orchideæ, and palm-trees.

There are two sets of veins in leaves, the one lying immediately over the other; these are not commonly distinguishable from each other, but if the leaves of many plants be steeped in water till the part which fills up the veins be dissolved, the skeleton of the leaf may be separated, and in some, as the sea-holly, the two sets of veins can be seen.

The different forms and characters of leaves are distinguished by terms, with the principal of which, it is necessary to be acquainted, because the various *species* of plants are often characterized by the figure of their leaves.

When the stalk bears only one lamina, the leaf is said to be *simple;*—*Ex.:* the oak, lilack, cabbage, geranium, and most plants, have *simple* leaves.

When the stalk bears more than one lamina, and these are jointed to it, so that they can be separated without tearing, the leaf is said to be *compound;* each lamina, whether it have a stalk to it or not, is called a *leaflet*, and the joint is called an *articulation*. The horsechestnut, rose-tree, ash, sweet and common pea, laburnum, clover, and a multitude of plants, have compound leaves.

Compound leaves are of different kinds.

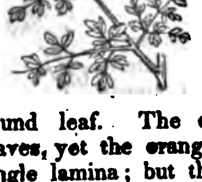
1. *Simple-compound:* when the leaf-stalk is not divided or branched, and bears several leaflets.

Digitate: when all the leaflets are articulated at the end of the stalk;—*Ex.:* wood-sorrel has three leaflets, or its leaves are *ternate;* horsechestnut has seven; lupin has several.

Pinnate; when the leaflets spring from the stalk, in pairs opposite each other, with, in some cases, an odd leaflet at the end, as the rose; or with a tendril, as in most vetches.

In the leaves of the agrimony, meadowsweet &c., the leaflets are unequal in size, and in some vetches, &c., instead of being opposite on the stalk, they are alternate on each side of it.

2. *Double-compound:* when the principal stalk of the leaf has two or more secondary stalks branching from it, which bear the leaflets. If these stalks are all at the end of the principal one, as in the sensitive plant, &c., the leaf is termed *digitate-pinnate;* and if they arise from the side of the principal stalk, it is termed *bi-pinnate*, as in the caraway, angelica, &c.



3. *Triple-compound*, when the principal stalk has secondary stalks, and these again have others articulated with them, as in the carrot, samphire, &c.

It is the articulation of the laminæ with the stalk that essentially constitutes a compound leaf. The orange tribe have compound leaves, yet the orange-tree has leaves with only a single lamina; but this is found to be articulated with the stalk, and therefore is conformable to the character of the tribe.

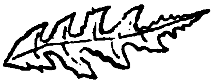
Simple leaves and the leaflets of compound leaves are said to be :—

Entire, when the *margin*, or edge, is neither notched nor cut, but in one continued smooth line; whatever the general shape of the leaf may be. *Ex.:* lilack, laurel, periwinkle, oleander.

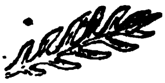
Serrated, when the edge is cut or notched like the teeth of a saw. *Ex.:* the nettle, elm, and the leaflets of the rose, and a multitude of others. If the teeth are rounded instead of sharp, the leaf is called *crenate*, as in groundivy, hoarhound, woodbetony, &c.

Sinuated, when the edge appears as if cut into roundish forms, in and out alternately, like the oak-leaf and others.

Cut, when the edge, instead of being in rounded *segments*, is in sharp angular forms.

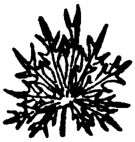


Runcinate, when the segments of a cut leaf are pointed, irregularly curved, and turned back towards the base of the leaf. *Ex.:* Leontodon, London-rocket, &c.



Pinnatifid, when the margin appears as if cut very deeply, nearly or quite to the midrib, into irregular forms called *lobes*, which project out at right angles or nearly. *Ex.:* common groundsel. When the lobes are again cut into smaller, the leaf is called *bi-pinnatifid*.

Palmate, when the general form of the leaf is roundish, but it is deeply cut. *Ex.:* several kinds of geraniums, serrated passion-flower, &c.



The two last are analogous in *simple* leaves to pinnate and digitate compound ones.

With regard to their general form, leaves and leaflets are said to be :—

Round, as these of the common sheeprot.

Roundish, as those of the common moneywort.

Oblong or *ovate*, as those of the brooklime.

Obovate, oblong or ovate, but having one end larger than the other, as in the brookweed, primrose, &c.

Lanceolate, when the leaf is pointed and equal at each end, but much longer than it is wide; as in the wallflower, willows, oleander, &c.

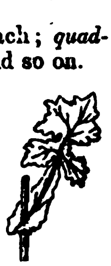
Ovate-lanceolate, when the ends of the leaf are rounded instead of pointed.

Linear, when the leaves are very long, and so narrow as to look like a *line*, as those of many grasses, teadrush, &c.

Triangular, as those of the common orach; *quadrangular*, as those of the black poplar, and so on.

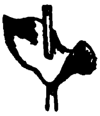
Cordate, or *Heart-shaped*, as in the lilack, lime, white waterlily. In the woodsorrel and clover, the leaflets are inversely heart-shaped.

Lyrate, when the terminal lobe is larger than the side-lobes which are opposite to each other. *Ex.:* charlock, Belleisle cress, wild-turnip, &c.



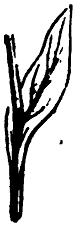
In the Sagittaria, buckwheat, sorrel, and spotted arum, the leaves are *hastate*.

When there is a small point at the end of an *entire* leaflet, as in the vetches, the houseleek, &c., it is said to be *mucronate:* when the lamina spreads out at the end of the stalk, like a flat umbrella, the leaf is said to be *peltate*. *Ex.:* Indian cress.



When *opposite leaves* are *sessile*, their bases often grow together, and look like one leaf, with the stem of the plant running through it; in such cases the leaves are said to be *connate; Ex.:* the wild-teazle, soapwort, perfoliate honey-suckle, *Chlora perfoliata*, &c.

Sometimes the bases of sessile single leaves are so decidedly united, that the stem appears to pass through their substance, as in the common hare's-ear, &c.; these leaves are said to be *perfoliate*.



In some plants the margins of sessile leaves run down on each side of the stem, so as to seem to be of one piece with it; *Ex.:* many thistles, the mullein, &c.; these leaves are said to be *decurrent*.

In the grasses, sedges, &c., the bottom of the leaf is wrapped round the stem for some distance; these and similar leaves are said to be *sheathing*.

The leaves of plants have not in all cases flat and thin laminæ; they are in several instances thick or *fleshy;* and are called *cylindrical*, *semi-cylindrical*, *trilateral*, &c., according to the figure which, when sliced across, they present. A fleshy leaf, which is thickest in the middle, and sharp at the two edges, and pointed at the end, is said to be sword-shaped, or *ensiform; Ex.:* Iris, aloe, &c.

(To be continued.)

POETRY.

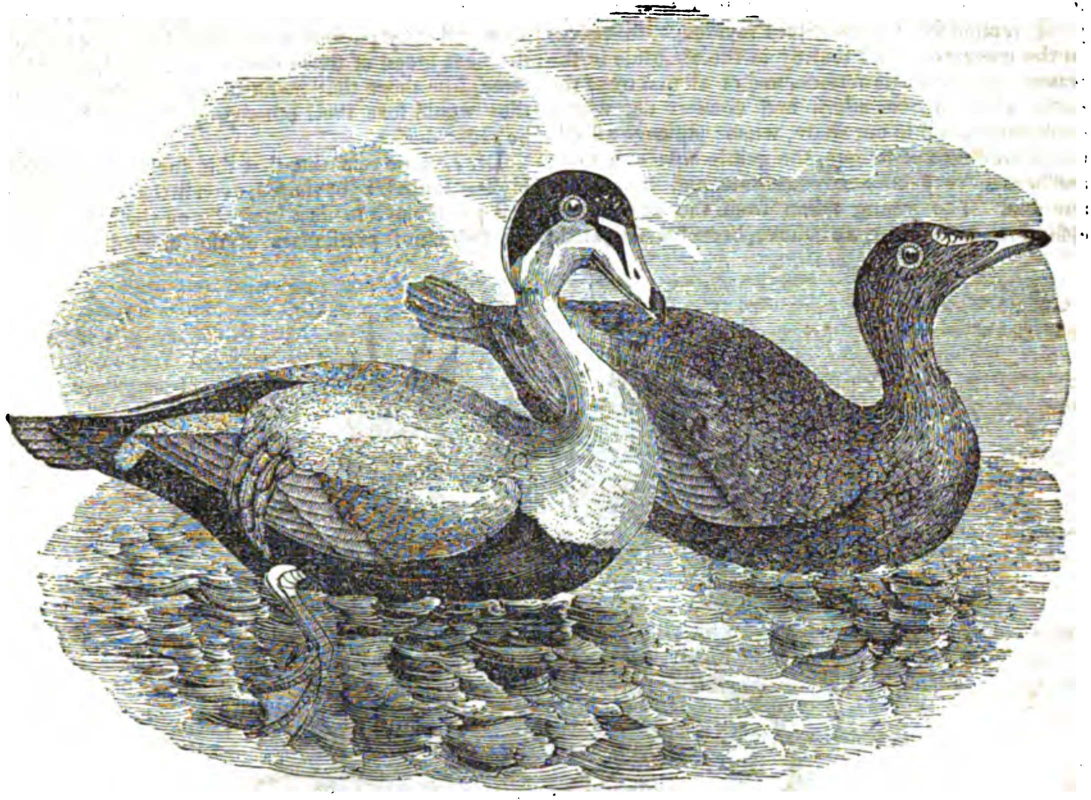
MY COUNTRY.—J. K. PAULDING.

Again Peace showered her blessings o'er the land,
And happiness and Freedom, hand in hand
Went gayly round, and knocked at every door
Hailing the rich and biding with the poor,
While wondering nations watched our bright career,
And looked, and longed to seek a refuge here,
From all the countless pack of galling ills,
That slaves still suffer, when the tyrant wills.

And oh! be such thy ever-during fate,
My native land! still to be good and great!
Still to be dear to nations, doubly dear,
The people's hope, the tyrant's lasting fear,
Still to be cherished by the good and brave,
Still to be hated by the dastard slave,
That turns in sick'ning envy from thy face,
The mirror that reflects his deep disgrace;
Still to be feared for thy far beck'ning smiles,
That oft the despot of his prey beguiles,
Still to be loved, by those who joy to see
The race of man live happy, great, and free.

Yes! lone and spotless virgin of the west,
No tyrant pillows on thy swelling breast,
Thou bow'st before no despot's guilty throne,
But bend'st the knee to God, and him alone!
Dear imp of Freedom, may'st thou live to see,
In after days a glorious race like thee,
Whom thy example haply shall inspire,
With the pure glow of Freedom's sacred fire,
Teach them a sober way to break their chains,
Wipe from fair Freedom's brow those bloody stains
That hair-brained zealots sprinkled madly there,
And show what heaven made it, pure as fair,
Till in good time a train of nymphs like thee,
Blooming and happy, virtuous, wise, and free,
Shall hail thee eldest sister of the train,
And o'er regenerate earth, sweet cherubs reign.

NATURAL HISTORY.



EIDER DUCKS.—MALE AND FEMALE.

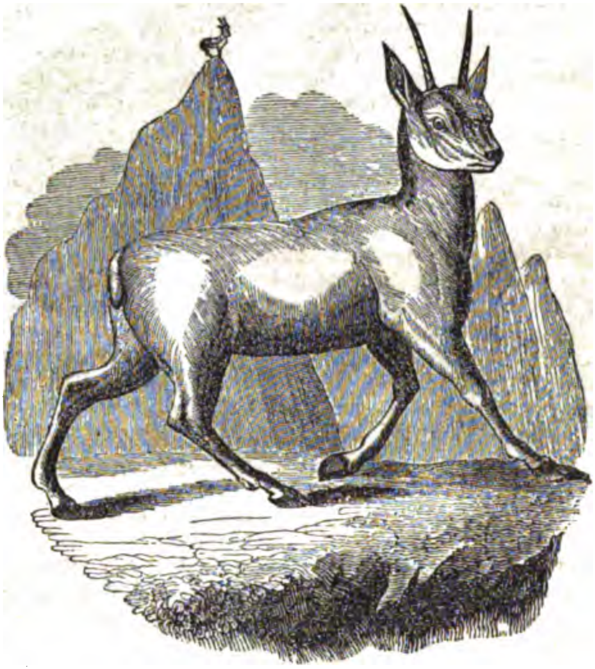
This aquatick fowl is not a distinct species, but only a variety of the same kind of feathered animals, among which there are many sorts, differing in colour, size, plumage, and, in some instances, in a few peculiar habits. But the genus of the duck is the same with all of them. Their general characteristick is,—a broad bill, depressed below the top of the head, the end furnished with a horny substance, termed a nail; the edges of the mandibles, that is to say, the upper and under parts of the bill, pectinated, having little divisions, like the teeth of a comb; a small oval nostril approaching the eye on each side of the upper mandible; the tongue broad, and fringed near the base. They have three toes before, connected by a membrane called a web, and they have one toe, or talon, behind the foot. In these particulars the several species resemble each other, with some slight variations, and are principally distinguished by their size, colour, and habits. Of the latter, namely their habits, it is not unreasonable to suppose that those habits are the result of circumstances, and not more natural to one species than to another: for whatever ornithologists may say to the contrary, probably the wildest of the species might in time be tamed; and, on the contrary, the tame ones would grow wild, were they banished from the farmyard to the marshes of wilds and deserts. They all get their food after the same manner, in the choice of which they are not remarkably delicate, and they have all the like faculty of separating that which they wish to swallow from that which they wish to eject, after it is in their mouths, without *disbouching* the whole in order to select by the eye. This instinctive property is necessary, as they feel out their food, while their eyes are prevented from surveying it, among heaps of mud, &c.

There are many kinds of ducks; the principal are, the bimaculated duck, the black duck, the common wild duck, the duck ferruginous, the harlequin duck, the domesticated hock-billed duck, the pintailed duck, the tufted duck, and the *eider duck; cum multis aliis*, with which at present we have nothing to do,—all the other varieties being foreign to our purpose in describing the eider duck only.

The eider duck is an inhabitant of the northern regions, seldom seen in low latitudes; it breeds in the north of Scotland, and is common on the Western Isles, and also on the Farn Islands, on the coast of Northumberland. It makes its appearance mostly in the months of June and July, those being probably the months of incubation, or hatching its young. It seldom lays more than five or six eggs, of a pale greenish olive colour. The nest is on the ground, composed of plants from the seaside, and lined with down, most of which is plucked by the female from her own body; and so fine and light is this down, that a moderate hat-full, not pressed close, will not weigh more than three quarters of an ounce. This down forms a considerable article of merchandise, from the northern parts, where flocks of the eider duck frequent, to the southern coumtries, where it is used for pillows, stuffing of quilts, and such purposes as render both ease and elegance to the qualities of conveniences for repose and indulgence.

Perhaps we are not acquainted with all its uses, and consequently do not fully understand its value; the uses, however, that we do know to which it is applied, remind us of a bountiful Providence, that gives us the command of all that fly in the air, glide in the waters, or float on its surface, and of all that tread the earth, whose fleeces adorn and comfort us, whose exuberances fall to our share, whose plumage affords us the soft cure of fatigue, the gentle solace of rest; and whose very bodies resuscitate and renew our strength. The young taken from the nest of the eider duck have never, we believe, been domesticated; but if the impregnated eggs were placed under a common tame duck, and the ducklings, when hatched, fed with such aliment as the eider ducks mostly seek, till they partook of other food, it is not unlikely the next breed of those ducks, so treated, would be tame, like those that swim in our ponds; but then they would lose their other properties, and cease to be eider ducks.

Dr. Latham remarks, that this duck is found in the highest latitudes yet visited, even in the polar regions; and he thinks it feeds principally on shellfish. These are the chief particulars of the eider duck.



THE KLIPSPRINGER.

This animal is one of the many species of the antelope; it inhabits the southern regions of Africa, among the most inaccessible and barren mountains of the Cape; the native Hottentots call this animal the Kainsi. Its length, from the tip of the muzzle to the end of the tail, is three feet two inches; its height at the shoulders is twenty-one inches, but at the croup, about twenty-two; the horns of this animal are three inches and a half long; the ears four and a quarter, and the tail three. The head of the klipspringer is small and short, terminating in a small round black muzzle, void of hair; the sides of the head are somewhat compressed, and contracted rather suddenly in front of the orbits; the ears are large, open, and at the points a little rounded; and the eyes are particularly dark, and rather large. The horns of the male are quite straight, and have three or four small annuli, or rings, round their roots; elsewhere they are perfectly smooth. The knees are, in appearance, a hard patch, which is caused by their frequent rubbing against the rocks; while the tail is but a short brush of hair. The colour of the animal is generally of a mixture of yellow and green, but the under parts of the body are a light sandy red, tinged with yellow; and the inside of the ears is clothed with long white hair, surrounded at the edges with a narrow black border. In this species of antelope, the legs are much stronger than in most others, and the hoofs much rounder, not pointed and flat, as in many others; and the tips of them are worn much more than any other part, from the animal treading on them alone; which, together with the straightness of the pastern joint, in a great measure accounts for the astonishing agility with which the klipspringer bounds from the high and dangerous rocks and precipices which abound in that country. From the great value set upon its hair for stuffing mattresses, saddles, &c., and for its flesh, which is excellent venison, immense numbers fall a prey to the avarice of the natives; and in addition to these, a great many of the young ones are destroyed by eagles, and other birds of prey inhabiting that climate; so that the animal is become less common than formerly, and grows every day much scarcer.

"Harry, I cannot think," says Dick,
"What makes my ankles grow so thick."
"You do not recollect," says Harry,
"How great a *calf* they have to carry!"

CONDENSED HISTORY OF OHIO.

Ohio was organized as a state, in the spring of 1802, and the present constitution was adopted by a convention, which met at Chillicothe, in November of the same year.

The first settlement was commenced at Marietta in 1788, by a company of emigrants from New England. Gen. Putnam, and forty-six other hardy, enterprising individuals from Massachusetts, Connecticut, and Rhode Island, led the way into the western wilderness, and were the first adventurers who commenced a permanent settlement northwest of the Ohio.

The river Ohio, gave name to the state; and some historians have indulged in considerable speculation as to the true origin of the word. Its proper derivation is not yet settled, nor is it material whether in fact it mean, agreeably to the early French explorers of the Mississippi valley, "Beautiful river," or takes its origin from the term "Bloody river," as designated by the Indians.

Whatever may have originated the term *Ohio*, it must certainly be admitted that it is now the name of one of the most flourishing states of the union.

Ohio is bounded north by Michigan and the Lake, east and south by Pennsylvania and the Ohio river, and west by the state of Indiana. The state is nearly 222 miles in extent from north to south, and from east to west; containing an area of about 200 miles square, independent of the waters of Lake Erie. The climate is warm and salubrious; and the character and manners of the people partake, in no inconsiderable degree, of those of the respective states and countries from which they emigrated.

Brought rapidly together from all parts of the world, it cannot be supposed that they will immediately assimilate in social habit; and that time and opportunity are alone required to produce that uniformity of opinion and feeling, so essential to all well-regulated communities.

The population of the state has been rapid, almost beyond example. By the census of 1830, as returned from the several counties, it will be seen that Ohio contained 937,679 inhabitants, which number has no doubt been since increased to something more than 1,200,000. The number of legal voters, as taken by the authority of the state, in the year 1823, was 124,624. By the enumeration of 1827, the number was 147,745; and by a subsequent enumeration, (1831,) the number was swelled to 182,820. The returns of votes polled for electors of president and vice-president in 1832, was 158,294. This increase of population and publick suffrage, must be considered as unparalleled in the history and settlement of this country. In 1800, the territory northwest of the Ohio contained only 45,000 souls! Of free blacks, under the census of 1830, there were, 9,580; slavery being unknown to the constitution of the state, all colours and all complexions of people breathe the free air of Ohio. This fact, forms no doubt, a prominent argument why the settlement of this state has been so much more rapid than the states south of the Ohio river. It held forth inducements to early emigration, and was one of the great leading causes of the rapid strides of Ohio in the march of wealth and improvement.

The present state of literature in Ohio, is encouraging. Our schools and colleges are in a flourishing condition. There are no less than eight colleges in the state, some of which are liberally endowed, and bear the name of Universities. Each of these respective seminaries of learning, as well as the several academies and publick schools scattered over the state, will be more particularly noticed in the subsequent pages of this work.

The principal towns of the state are, Cincinnati, Columbus, and Sandusky (incorporated cities) Chillicothe, Cleaveland, Zanesville, Dayton, Steubenville, Marietta, Portsmouth, Painesville, Lancaster, Springfield, Lebanon, St. Clairsville, Canton, Wooster, Massillon, Newark, Xenia, Hamilton, Warren, Circleville, Mount Vernon, New Lisbon, Norwalk, Wilmington, Piqua, Urbanna, Delaware, Marion, Coshocton, Huron and Ashtabula. There are many other towns of nearly equal size and importance with some of the above, which are rapidly increasing in wealth and business The city of Cincinnati, from its position on the Ohio, its favourable situation and great local advantages, must continue to flourish, as it has done, for a long succession of years. It must remain, and perhaps forever, the great emporium and chief commercial city of the west, to which the other towns of Ohio are tributary.

The internal improvements of the state, by means of canals, important publick roads, and objects of local enterprise, have been rapidly advancing, under the guidance of an enlightened publick policy, within the few past years; and should the spirit of improvement and industry that has hitherto marked the conduct of the citizens of this state, continue to animate them in the successful prosecution of the grea works now in progress, Ohio will soon exhibit to the world a glowing picture of her great internal resources, and furnish an example fit for the imitation of all her surrounding sisters.

The Ohio canal, 308 miles in length commencing at the flourishing town of Cleaveland, on lake Erie, and terminating at Portsmouth, on the Ohio, is one of the greatest works of the age, and second only, in point of importance, to the Grand canal in New York. This splendid improvement is truly an ornament to the state, and reflects the highest credit on its early projectors, and upon the gentlemen commissioners, through whose great skill and industry, faithfulness and perseverance, it has been carried successfully through the final completion. At the inceptive stages of this great work, many opposing obstacles presented themselves—obstacles that nothing but great foresight, and unshaken firmness and resolution could have surmounted. Ohio should not be easy to forget the services and exertions of those on whom the responsibility of this work was made to rest.

The Miami canal, is another important link in the chain of western enterprise. This canal is 66 miles in extent, commencing at Dayton, now among the most popular and flourishing of the inland towns of the state, and terminating at Cincinnati.

This, also, is a work of magnitude, and of great publick utility. It extends through the heart of one of the finest countries in the world. The Miami and Sciota valleys, are supplied with a large body of the richest bottom land in America, and abound with the most fertile soil of any portion of the union, of equal extent.

In addition to these two great publick works, there are several lateral canals extending from the main canals to the most prominent commercial business points in the adjacent country. The lateral branch, which terminates at Columbus, is 11 miles in length. The Dresden side-cut, and the slackwater navigation to Zanesville, is 17 miles in extent. The Lancaster lateral canal, and the one leading from the Miami canal to Lebanon, are in a state of forwardness, the former nearly, or quite completed.

We have already more than 400 miles of finished canals in the state, and when the Miami canal shall be extended agreeable to the provisions of the act of the legislature for that purpose, and that of the Wabash and Erie line shall be completed, we shall have nearly or quite 550 miles of canal in Ohio. These indelible marks of Western industry and enterprise, are flattering to the pride of all who love their country, and rejoice in its prosperity.

Our publick highways, too, are rapidly improving, through the agency of a wise system of internal policy. A laudable public spirit has been infused among the people. Many important turnpikes have been constructed within the few past years, and that great national work, the Cumberland road, as it is familiarly called, extending through the centre, and the heart of the state, from east to west, affords incalculable advantages to the business of the state, and furnishes the finest facilities for travel, of any work of its kind in the Union.

It is computed that Ohio enjoys, upon our northern borders, about one hundred and ninety miles of ship and steam-boat navigation; and nearly or quite four hundred and thirty-six miles of steam-boat navigation on the Ohio.

These great local advantages, united with a soil abounding in every production and luxury of life, must inevitably give Ohio, at no distant day, if not the first, at least the second rank among the states of this Union. She already holds a conspicuous place in the confederacy. Although, in 1830, the fourth in point of population, she is now the third state, not only in number, but in wealth and resources; and for her rapid advancement in population and improvement, she is mostly indebted to her admirable form of government, to the spirit of industry that pervades her citizens, and to the mildness and freedom that marks her laws and institutions.

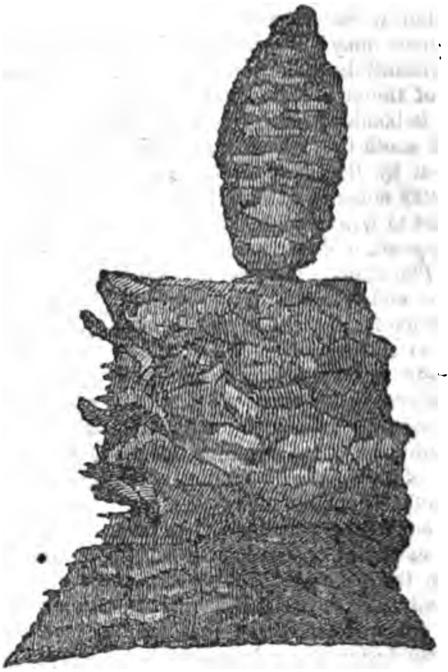
The form of the government of Ohio partakes of the nature of the other members of the republick, varying only in some unessential particulars.

The General assembly of the state consists of a Senate and House of representatives, the former of 36, and the latter of 72 members. The members of the Senate are elected once in every two years, and those of the House are chosen annually. A senator, to be eligible to a seat in the Senate, must be 30 years of age, and the members of the House of representatives of the age of 25.

The first territorial legislature met at Cincinnati, as early as 1799, when there were assembled only five members of the Council, and about sixteen or eighteen representatives. The names of these individuals may appear in some portion of the following pages. Judge Burnet, of Cincinnati was one of the members of the Council, and Wm. H. Harrison the first delegate to Congress ever appointed in the territory. Allusion is here made to those minute particulars, with no other view than to show the rapidity with which the population and improvements of the state have advanced, and to cite the reader to the first grand impulse given to the spirit of emigration and enterprise that has characterized the settlement of the West.

The organization of the territorial courts, as well as the other civil institutions of the country, gave a sudden impetus to those changes and improvements which followed the tread of the early adventurer to these Western wilds; and the citizen of the world, he whose observations and researches have led him to a general and comprehensive view of our present state of civilization and wealth, must look with no ordinary amazement and wonder, on the mighty revolutions effected in this important portion of the American Union.

Ohio Annual Register.



CASTLE ROCK,

ON THE BIG PRAIRIE, UPPER MISSISSIPPI.

A sketch and description of this curious rock, were found in the Philadelphia Saturday Courier, of October 10.

It is situated, we are informed, on the Big prairie, about ninety miles southwest of lake Pepin, Upper Mississippi. It stands upon a small rise of ground, at the first sight it appears like a castle or a church without a cupola, and can be seen twenty or thirty miles.

"The base-rock is about one hundred feet in circumference, and in height about sixty; the rock on the top varies in circumference, from three to fifteen, or, perhaps, twenty feet; the height of this rock is, at least, thirty feet, and it appears as if the least puff of wind would blow it over,—it stands on so small a foundation, a mere pivot, and on so elevated an eminence. The rock is called by the Sioux Indians, the Standing stone, or Castle rock;—they have tried frequently to get on the top, but have never succeeded.

BOUNDARIES OF EMPIRES.

The limits of empires are controlled by two causes, the physical geography of the soil, and the power of man; the first is eternal, and the last variable; thus, in examining history, we find that the first produces the most permanent effect.

Nations often war against those eternal limits, which are pointed out by nature.

The Turks and Persians have, in modern times, renewed the ancient contest between the Romans and Parthians, and have fought for several centuries, without gaining permanently one square mile of territory.

The ancient Grecians fought for a thousand years, and their small republicks, at the termination of the contest, retained their original boundaries.

England and France have amused themselves by wars, which may continue to the end of time, without joining, under one sceptre, the vineyards of Burgundy and the valleys of England.

Alexander invaded the east, but he could not enlarge the confines of Macedonia.

Bonaparte subdued Europe, but France is not now more extensive than formerly.

Tamerlane overcame Asia, but it was not in his power to unite the fire-worshippers of Persia with the sons of Confucius, nor could he join under one empire, the shepherds of Tartary and the agriculturists of India.

When these phantoms of universal empire perish, nations resume their ancient limits. Conquer them, exterminate them, destroy the memory of their existence as a people; still the new kingdom will have the same limits as the old. A nation, subduing those by which it is surrounded, resembles a river overflowing its banks; the flood gradually subsides, and the stream returns to its ancient channel. When successive hordes of barbarians invaded the dominions of imperial Rome, did they unite the frozen regions of the North with the olive gardens of the South?

When England was conquered successively by the Romans, Saxons, Danes, and Normans, did they surround, with one rampart, Italy, Saxony, Denmark, Normandy and England? The decisions of nature soon cut asunder the artificial arrangements of man.

The barriers erected between communities of men vary in strength; let us examine them in their order:

1. *Forests.* In the infancy of man, the gloom of a forest often deters him from entering within its shade. The Hercynian forest divided many of the ancient tribes of Germany, and its influence is still perceptible in that country. The divisions of some of the countries of England are derived from the same source. Many tribes of Indians in America are divided by thick woods, and this is one reason why civilized nations have larger boundaries than those which are savage.

2. *Rivers.* In the first ages of man, rivers are a real boundary; they prevent the passage of armies. They are now used as a boundary because they afford a definite line, about which there can be no dispute. Europe, Asia, and America, afford numerous examples. A singular fact takes place in regard to them; a small stream is a better division between nations than a larger river. The Danube would not form a line of demarcation between Russia and Turkey, but that there is a sparse population on its banks. France has fought to obtain the boundary of the Rhine; she must either advance to the mountains beyond, or retire to the next range of hills in her present territory. The reason of this law is obvious; the fertile banks of large rivers are usually inhabited by numerous tribes of men, the calm and tranquil surface of the river invites them to cross over, the interests of commerce keep up a continual intercourse, the river is early passed, and both banks must be united under one government. Never has the Ganges, the Nile, the Dannbe, or the Rhine, seen hostile nations in possession of the opposite shores.

The small stream which divides Spain and Portugal is a more lasting boundary than the Tagus would be if it flowed in the same direction.

> 'Where Lusitania and her sister meet,
> Deem ye what bounds the rival realms divide!
> Or ere the jealous queens of nations meet,
> Doth Tago interpose his mighty tide?
> Or dark Sierras rise in craggy pride?
> Or fence of art, like China's vasty wall?
> No barrier wall! no river deep and wide!
> No horrid crags! no mountains dark and tall!
> Rise like the rocks that part Hispania's land from Gaul.
> But there between a silver streamlet glides,
> And scarce a name distinguisheth the brook,
> Though rival kingdoms press its verdant sides."

3. *Seas and Oceans.* These form a decided boundary to the greater number of nations; but the effect of dominion at sea will be noticed hereafter.

4. *Mountains* form a permanent and frequent boundary. They vary in their power to restrain nations within proper limits according to their breadth and altitude, but, on the whole surface of the earth, they form a real barrier. An individual ascends a mountain, but he returns to dwell in the valley. The peasant of Hungary fears to ascend the hill which overlooks his native plain.

> "Mountains interposed
> Make enemies of nations which had else,
> Like kindred drops, been mingled into one."

5. *Deserts.* I have mentioned the wars between the Turks and Persians, which are carried on across the deserts of Mesopotamia. The ancient kings of Egypt made frequent expeditions to conquer the Arabs dwelling on the sands of Africa, but they defied their armies. Ali Pacha has exerted himself in a similar way, with the same success.

A desert forms a safe barrier to China. A desert and the Rocky mountains form a boundary to the United States of America on land.

1. *The surface of the earth is thus separated into certain natural divisions, which may be called natural kingdoms.* Every island, is a natural kingdom. Every part of the world, which is surrounded by strong natural boundaries, is a kingdom. It is impossible to conquer one half of these divisions. In waging war with them, you must complete a total conquest, or return. No arms could conquer half China. The Tartars and native Chinese once made a treaty of partition; nature declared its execution to be impossible.

Nor could the plains of England be divided between two kings. Canute and Edmund drew an imaginary line through the centre. The treaty could not be observed.

When nations occupy part of natural kingdoms, they must advance or recede. The kingdom of

Prussia must be bounded by new acquisitions, or she must recede. This is the reason why she is constantly armed.

2. *Small natural kingdoms in the vicinity of those which are larger, often lose their independence.*

Small islands are always subdued. No one could now erect the standard of empire on the island of Ithica, or become king of the Fortunate islands. We see this rule exemplified in the history of Great Britain. The British islands contain five natural kingdoms: England, Cornwall, Wales, Scotland, Ireland. Wars took place among the Saxon monarchs of the heptarchy for four hundred years, until the valleys of England were united under one monarch. She then united to herself the smaller natural kingdoms, by which she is surrounded in the order of their respective strength.

The powerful empire of Austria has subdued the smaller divisions by which she is surrounded.

3. *Where natural kingdoms have a certain size, it is difficult to conquer them.*

Nothing but the fury of religious dissension could have subjected Bohemia, with her circular rampart of mountains, to a foreign power.

Let us now consider how the power of man modifies these laws. There is scarcely any law known among nations but force. The power of empire ebbs and flows like the tide. The savage tribes of Britain were easily defeated by the cohorts of Rome. At another period, their descendants conquered the veteran troops of France, led on by their emperour.

> "Nations melt
> From power's high pinnacle, when they have felt
> The sunshine for a while."

The legions of Rome, the peasants of Switzerland, the infantry of Spain, the chivalry of France, the crossbowmen of England, and the battalions of Sweden, have, in succession, given law to Europe, and then retired to their native land.

The process of conquests is usually this. Nations become luxurious—they are invaded by a neighbouring tribe; some of the vanquished fall in battle, and their place is supplied by the conquerors.

The kingdom retains its ancient boundary, and has merely sustained a change of inhabitants, together with the havock and distress which a state of war occasions.

Fears have been expressed that France and Spain would be united under one empire! Europe was in arms many years to prevent it. The Pyrenees have made it impossible. The union of Russia and Siberia is dreaded! When Siberia possesses a large population, she will no longer be under the dominion of Russia.

The empire of Rome may be cited as an instance against this theory, but, on examination, will be found to yield it support. It required all the ferocity of the Romans, aided by their naval power and their permanent national council, to subdue the nations around. On the decline of their high fortunes, their empire was broken into its original limits

NAVAL POWER.

'War is the trade of barbarians." "The whole art consists in assembling a force superiour to that of your adversary." A great naval power is enabled to do this by seizing on the small detached portions of the world, and on large kingdoms which have not yet arrived at their full power, and which have become imbecile. This is easier, to such a power, because all countries are easily approached by sea, nature has made few impervious coasts; she intended that man should make use of the ocean. This produces the somewhat anomalous appearance of countries the most distant under one sceptre.

If we examine the reason of this law which binds nations within certain limits, we shall find it arises from similarity of habits and feelings, which at the same time leads them to hostilities all around.

The Indians of America war with all but their own tribe.

In the highlands of Scotland, each clan was accustomed to combat all those who lived in the neighbouring valley.

Denon has given a correct and vivid description of the combats which take place between the villagers of the Nile. On inquiring the reason, "They know not; but their ancestors had been accustomed to fight, and it would be improper to break so laudable a custom."

Even in civilized countries, this hostile spirit is shown. Whereever two villages, of nearly equal size, are situated within ten miles of each other, rivalry takes place, and they would occasionally combat, but they are restrained by the laws. Cities within one hundred miles of each other, have the same spirit of enmity.

If we examine the map of Europe, we perceive that Great Britain, France, Spain, Holland, Switzerland, Bavaria, Denmark, Sweden and Austria, are natural kingdoms. Norway has always been in vassalage, because her population is much scattered. Turkey, Asia Minor, and Egypt, are joined by the power of a fleet, as they were under the Greek empire. Persia has its ancient limits. China has had the same from time immemorial. The Arabians subdued Asia, but they retain their sway over nothing more than their original sandy deserts. Hindostan is a natural empire, too weak to defend herself. America is arranged in natural divisions.

Thus, on the surface of the world, man has done little to change the decrees of the Almighty Power whose fiat governs the universe.

BIOGRAPHY.

ROBERT FULTON.

Mr. Fulton is acknowledged to have been among the most distinguished men of his age. His successful exertions to furnish a means of transportation which "brings the inhabitants of the world nearer each other," have shed upon his name a lustre that must be visible to the latest posterity. We do not propose here to examine how closely the efforts of his genius are connected with the happiness of mankind, even where they seem most remote, but simply to afford a brief sketch of his life as an accompaniment to his portrait.

Robert Fulton was born in the town of Little Britain, in the county of Lancaster, state of Pennsylvania, in the year 1765, of a respectable though not opulent family. He was the third child and eldest son. His peculiar genius manifested itself at

ROBERT FULTON.

From a Painting by Inman.

an early age, in an irrepressible taste for drawing and mechanism. At the age of twenty-one he was intimate with Franklin. He had previously painted portraits and landscapes in Philadelphia, and derived considerable profit from it. Soon after he sailed for England, with the view of seeking Mr. West's assistance in the prosecution of his art. That great painter took him into his family, where he remained several years. In 1793, Mr. Fulton was actively engaged in a project to improve inland navigation. Even at that time he had conceived the idea of propelling vessels by steam. In 1804, he had acquired much valuable information upon the subject, and written it down, as well as much concerning his own life, and sent many manuscripts from Paris to this country, but the vessel was wrecked and most of the papers destroyed. About this period the subject of canals seems to have been the principal object of his attention, although he made many valuable inventions, and wrote numerous essays, characterized by strong talent and deep knowledge. His works were not indeed confined to scientifick topicks, but he furnished other essays which were greatly praised. The characteristick features of his mind were ardour and perseverance. When Napoleon held the power of France, Mr. Fulton engaged in several schemes under the auspices of the first consul, for an account of which, we refer the reader to the Memoir of Mr. Cadwallader D. Colden. In 1806, Mr. Fulton embarked at Falmouth, and arrived at New York, by way of Halifax, on the thirteenth of December. Upon his arrival in this country, he immediately commenced his arduous exertions in the cause of practical science, and among other subjects which occupied his mind, was that of steam navigation. He had been long engaged in Europe in an attempt to introduce a vessel or torpedo to be used in war, for the purposes of destroying the marine enemy. Here is a curious anecdote of him at this time :—

"He had not been landed in America a month, before he went to the seat of government, to propose to the administration to enable him to prosecute a set of experiments with his torpedoes. He found Mr. Madison, then secretary of state, and the secretary of the navy, Mr. Smith, much disposed to encourage his attempts, the success of which Mr. Fulton, by his ingenious models and drawings, with his lucid and engaging mode of lecturing upon them, made appear so probable. The government authorized certain expenditure to be made, under the direction of Mr. Fulton, for this purpose. In the mean time, anxious to prepossess his countrymen with a good opinion of his project, he invited the magistracy of New York, and a number of citizens, to Governour's Island, where were the torpedoes and the machinery, with which his experiments were to be made; these, with the manner in which they were to be used, and were expected to operate, he explained very fully. While he was lecturing on his blank torpedoes, which were large empty copper cylinders, his numerous auditors crowded round him. At length he turned to a copper case of the same description, which was placed under the gateway of the fort, and to which was attached a clockwork lock. This, by drawing out a peg, he set in motion, and then he said to his attentive audience, 'Gentlemen, this is a charged torpedo, with which precisely in its present state, I mean to blow up a vessel; it contains one hundred and seventy pounds of gunpowder; and if I were to suffer the clockwork to run fifteen minutes, I have no doubt but that it would blow this fortification to atoms.' The circle round Mr. Fulton was very soon much enlarged, and before five of the fifteen minutes were out, there were but two or three persons remaining under the gateway; some, indeed, lost no time in getting at the greatest possible distance from the torpedo, with their best speed, and did not again appear on the ground, till they were assured it was lodged in the magazine, whence it had been taken, and did not seem to feel themselves quite safe, as long as they were on the island. The conduct of Mr. Fulton's auditors was not very extraordinary or unnatural; but his own composure indicated the confidence with which he handled these terrible instruments of destruction, and the reliance he had on the accuracy of the performance of his machinery. The apprehension of the company surprized, but amused him, and he took occasion to remark, how true it was, that fear frequently arose from ignorance."

At what time Mr. Fulton's mind was first directed to steam navigation, is not distinctly known, but even in 1793 he had matured a plan in which he reposed great confidence. No one previously to Mr. Fulton, had constructed a steam-boat in any other way than as an unsuccessful experiment. Although many dispute his right to the honour of the discovery, none have done so with any semblance of justice.

Among those of his own countrymen who had previously made unsuccessful attempts to render the force of steam subservient to practical and useful purposes, was Mr. Livingston.

"While he devoted much of his own time and talents to the advancement of science, and the promotion of the public good, he was fond of fostering the discoveries of others. The resources of his ample fortune were afforded with great liberality, whenever he could apply them, to the support and encouragement of genius.

"He entertained very clear conceptions of what would be the great advantages of steam-boats, on the large and extensive rivers of the United States. He had applied himself with uncommon perseverance, and at great expense, to constructing vessels and machinery for that kind of navigation. As early as seventeen hundred and ninety-eight, he believed that he had accomplished his object, and represented to the legislature of the state of New York, that he was possessed of a mode of applying the steam-engine to propel a boat on new and advantageous principles; but he was deterred from carrying it into effect, by the uncertainty and hazard of a very expensive experiment, unless he could be assured of an exclusive advantage from it, should it be found successful.

"The legislature in March, 1798, passed an act vesting Mr. Livingston with the exclusive right and privilege of navigating all kinds of boats which might be propelled by the force of fire or steam, on all the waters within the territory or jurisdiction of the state of New York, for a term of twenty years from the passing of the act; upon condition that he should within a twelvemonth build such a boat, the mean of whose progress should not be less than four miles an hour.

"The bill was introduced into the house of assembly by Dr. Mitchell, he then being a representative from this city. 'Upon this occasion,' says Dr. Mitchell, in a letter with which he has favoured me, 'the wags and the lawyers in the house were generally opposed to my bill. I had to encounter all their jokes, and the whole of their logick. One main ground of their objection was, that it was an idle and whimsical project, unworthy of legislative attention.'

"A venerable friend, who was a member of the senate at that time, has described the manner in which this application from Mr. Livingston was received by the legislature. He said it was a standing subject of ridicule throughout the session, and whenever there was a disposition in any of the younger members to indulge a little levity, they would call up the steam-boat bill, that they might divert themselves at the expense of the project and its advocates.

"Mr. Livingston, immediately after the passage of this act, built a boat of about thirty tuns' burden, which was propelled by steam; but as she was incompetent to fulfil the condition of the law, she was abandoned, and he for the time relinquished the project.

"Though Mr. Livingston, previously to his connexion with Mr. Fulton, had done more than any other person towards establishing steam-boats, and though his experiments had been more expensive, and more successful, than any we have heard of, yet he was not among those who founded, on their fruitless attempts, a claim to be the inventors of navigation by steam, and whose opposition to Mr. Fulton has been very generally in proportion to the variety and ill success of their schemes. The worst project has generally been the most expensive, and on that account the worst projector seems to have considered his claim as the highest.

"On the contrary, Mr. Livingston availed himself of every opportunity of acknowledging Mr. Fulton's merits; and when he was convinced that Mr. Fulton's experiments had evinced the justness of his principles, they entered into a contract, by which it was, among other things, agreed, that a patent should be taken out in the United States, in Mr. Fulton's name, which Mr. Livingston well knew could not be done without Mr. Fulton's taking an oath that the improvement was solely his.

"In the American Medical and Philosophical Register, there is a piece published under the title of 'An Historical Account of the Application of Steam for the Propelling of Boats.' This was drawn up by Mr. Livingston, and addressed to Doctors Hosack and Francis, the editors of that journal. He very candidly acknowledges that all his efforts had been unavailing. He explains the nature of the connexion between him and Mr. Fulton, and shows what part that gentleman performed in the experiments which led to the accomplishment of their object. As this account, from Chancellor Livingston himself, must be very satisfactory, we shall present a part of it in an extract from the learned and valuable work we have just mentioned.

"'Robert R. Livingston, Esq. when minister in France, met with Mr. Fulton, and they formed that friendship and connexion with each other, to which a similarity of pursuits generally gives birth. He communicated to Mr. Fulton the importance of steam-boats to their common country; informed him of what had been attempted in America, and of his resolution to resume the pursuit on his return, and advised him to turn his attention to the subject. It was agreed between them to embark in the enterprise, and immediately to make such experiments as would enable them to determine how far, in spite of former failures, the object was attainable: the principal direction of these experiments was left to Mr. Fulton, who united, in a very considerable degree, practical to a theoretical knowledge of mechanicks.

"'After trying a variety of experiments on a small scale, on models of his own invention, it was understood that *he* had developed the true principles upon which steam-boats should be built, and for the want of knowing which, all previous experiments had failed. But as these two gentlemen both knew, that many things which were apparently perfect when tried on a small scale, failed when reduced to practice upon a large one, they determined to go to the expense of building an operating boat upon the Seine. This was done in the year 1803, at their joint expense, under the direction of Mr. Fulton; and so fully evinced the justness of his principles, that it was immediately determined to enrich their country by the valuable discovery, as soon as they should meet there, and in the meantime to order an engine to be made in England. On the arrival at New York of Mr. Fulton, which was not till 1806, they immediately engaged in building a boat of, what was then thought, very considerable dimensions.

"'This boat began to navigate the Hudson river in 1807; its progress through the water was at the rate of five miles an hour.

"'In the course of the ensuing winter, it was enlarged to a boat of one hundred and forty feet keel, and sixteen and a half feet beam. The legislature of the state were so fully convinced of the great utility of the invention, and of the interest the state had in its encouragement, that they made a new contract with Mr. Livingston and Mr. Fulton, by which they extended the term of their exclusive right, five years to every additional boat they should build; provided the whole term should not exceed thirty years; in consequence of which, they have added two boats to the North river boat; (besides those that have been built by others under their license,) the Car of Neptune, which is a beautiful vessel of about three hundred tuns' burden, and the Paragon of three hundred and fifty tuns.'"

It is well known, that this great man, after having devoted his time and genius to the service of his country and of mankind, was harassed by lawsuits and controversies with those who were violating his patent rights, or intruding upon his exclusive grants. Laws had been passed by the New York legislature, for the protection of the right of Livingston and Fulton, and for the promotion of their pecuniary remuneration, but bold attempts were made for their repeal. A petition to that effect was submitted to a committee, who handed in a report, which concluded by proposing a bill containing such provisions as might in their opinion be passed consistently with the faith, honour, and justice of the state.

"The proposed bill declared that nothing in the acts passed in favour of Livingston and Fulton, should be so construed as to affect the right which any persons might have to use the invention of the steam-boat, or any improvement thereon, which had been, or might thereafter be, patented under the laws of the United States; provided, that in such use, they did not interfere with any invention, or improvement, lawfully secured by the prior acts, or any of them.

"It is to be observed that this provision is a mere nullity; none of the acts referred to by it, did secure, or even pretend to secure, any invention; so that the law proposed by the committee was in effect an entire repeal of the exclusive grants to Livingston and Fulton; and Daniel Dod, with his patented application of the engine to cranks, or any other patentee equally meritorious, might, if the law had passed, have freely navigated the waters of this state by steam.

"When Livingston and Fulton had spent an immense sum of money in the establishment of their magnificent boats—when they had not realized a cent for their enterprise—but, on the contrary, were largely in debt on that account, this law was recommended to the legislature as one that might be passed consistently with good faith, honour, and justice!

"Upon this report being made to the house, it was prevailed upon to be less precipitate than the committee had been. It gave time, which the committee would not do, for Mr. Fulton to be sent for from New York. The senate and assembly in joint session examined witnesses, and heard him, and the petitioner, by counsel. The result was, that the legislature refused to repeal the prior law, or to pass any act on the subject.

"It was upon this occasion that his friend, Mr. Emmet, who appeared as his counsel at the bar of the house, at the conclusion of his speech, made that address to Fulton, which has been so much spoken of, and which was at once such an evidence of warmth of heart, rectitude of principle, and of superiour abilities. We do not pretend to give it in the very words he made use of, nor can it now have the effect, which his oratory and circumstances produced when it was delivered; but so far as it is in our power, we will endeavour to preserve it, as a just tribute to our departed friend, and as a memorial of the abilities of his advocate.

"Mr. Emmet, having said that he had concluded the observations which he proposed to make, as well against the petition, as the report of the committee; and that he had submitted their force with respectful confidence to the deliberation of the legislature, turned towards Mr. Fulton, and addressed him as follows:—'I know and feel, and I rejoice in the conviction, that, for the present at least *your* interests, my friend, are perfectly secure; but do not, therefore, flatter yourself that you will be involved in no future difficulties on the same account. Those whom I have just addressed, will certainly decide with enlightened liberality and a scrupulous regard to publick faith; but their power and authority will pass away. Your present antagonist, I also hope, will become convinced by this discussion, of the impropriety of his application, and refrain from repeating it; but interest and avarice will still raise up against you many enemies. You rely too implicitly on the strength of your rights, and the sanctity of the obligations on which they are founded. You expect too much from your well-earned reputation, and the acknowledged utility to mankind of your life and labours. You permit your mind to be engrossed with vast and noble plans for the publick good. You are inconsiderately sinking your present income, in the extension of publick accommodation, by steam-boats. You are gratuitously giving your time and talents to the construction of that great national object, your stupendous invention for maritime defence, which in itself is calculated to effect a revolution in naval warfare. You are profusely lavishing what the intense and unremitted study of years has acquired for you, in investigations and experiments tending to the same purpose. Your knowledge and your fortune are freely bestowed upon every thing that can contribute to the advancement of science, or of the elegant and useful arts. I admire and applaud you for your readiness to devote to the service of the publick, the opulence you derive from its grateful remuneration. Let me remind you, however, that you have other and closer ties. I know the pain I am about to give, and I see the tears I make you shed—but by that love I speak—by that love, which, like the light of heaven, is refracted in rays of different strength upon your wife and children; which when collected and combined, forms the sunshine of your soul; by that love I do adjure you, provide in time for those dearest objects of your care. Think not I would instil into your generous mind a mean or sordid notion; but now, that wealth is passing through your hands, let me entreat you, hoard it while you have it. Artful speculators will assuredly arise, with patriotism on their tongues, and selfishness in their hearts, who may mislead some future legislature by false and crafty declamations against the prodigality of their predecessors—who, calumniating or concealing your merits, will talk loudly of your monopoly—who will represent it as a grievous burden on the community, and not a compensation for signal benefits; who will exaggerate your fortune, and propose, in the language of Marat to the French convention, "Let the *scythe* of *equality* move over the republick." In a moment of delusion, (unless some department of our government shall constitutionally interpose an adamantine barrier against national perfidy and injustice,) such men may give your property to the winds, and your person to your creditors. Then, indeed, those who know your worth and services, will speak of your downfall, as of that portentous omen, which marked a people's degradation, and the successful crime of an intruder:—

> A falcon, towering in his pride of place,
> Was by a mousing owl hawked at and killed.

Yes, my friend! my heart bleeds while I utter it; but I have fearful forebodings that you may hereafter find in publick faith a broken staff for your support, and receive from publick gratitude, a broken heart for your reward.'

"In January, 1815, Mr. John R. Livingston, who owned the steam-boat which plied between New York and New Jersey, but which was stopped by the operation of the Jersey laws, petitioned the legislature of that state for their repeal After hearing witnesses and counsel for several days, the laws were rescinded. On this occasion Mr. Fulton was examined as a witness. The weather while he was at Trenton, where he was much exposed in attending the hall of the legislature, was uncommonly cold. When he was crossing the Hudson to return to his house and family, the river was very full of ice, which occasioned his being several hours on the water in a very severe day. Mr. Fulton had not a constitution to encounter such an exposure, and upon his return he found himself much indisposed from the effects of it. He had at that time great anxiety about the steam-frigate, and after confining himself for a few days, when he was convalescent, he went to give his superintendence to the artificers employed about her: he forgot his debilitated state of health in the interest he took in what was doing on the frigate, and was a long time, in a bad day, exposed to the weather on her decks. He soon found the effects of this imprudence. His indisposition returned upon him with such violence as to confine him to his bed. His disorder increased, and on the twenty-fourth day of February, 1815, terminated his valuable life."

We have already availed ourselves of the work of Mr. Colden. We shall conclude this outline biography by that gentleman's picture of Mr. Fulton's private circumstances, manners, appearance and character.

"Mr. Fulton, in contributing his proportion to the establishment of the magnificent boats on the Hudson, each of which cost from forty to sixty thousand, and the last one which has been built, upwards of a hundred thousand dollars, expended immense sums of money. The experiments he was always making, required very large disbursements, and the lawsuits in which he was incessantly engaged, from the moment his boats were seen in successful operation, were very expensive. From his patents he never derived the advantage of a single cent; but, on the contrary, in consequence of the misconduct or mistake of some of the agents he employed to construct boats to run under his patent right, and which he had contracted to furnish to some steam-boat companies, he was involved in losses to a very great amount. Owing to these circumstances, though he lived without ostentation or extravagance, he left his estate most excessively involved. His patent rights are so far expired, that if the law had afforded a protection which would ever have rendered them of any value, they would now be worth nothing; and although Mr. Fulton has not lived to see the fulfilment of the anticipations of Mr. Emmet, yet, certain it is, that unless some stability be given to the exclusive grants from this state, the only patrimony of his children will be, that load of debt which their parent contracted in those pursuits that ought to command the gratitude, as they do the admiration of mankind.

"Mr. Fulton was about six feet high. His person was slender, but finely proportioned, and well formed. Nature had made him a gentleman, and bestowed upon him ease and gracefulness. He had too much good sense for the least affectation; and a modest confidence in his own worth and talents, gave him an unembarrassed deportment in all companies. His features were strong and of a manly beauty: he had large dark eyes, and a projecting brow, expressive of intelligence and thought: his temper was mild and his disposition lively: he was fond of society, which he always enlivened by cheerful, cordial manners, and instructed or pleased by his sensible conversation. He expressed himself with energy, fluency, and correctness, and as he owed more to his own experience and reflections than to books, his sentiments were often interesting from their originality.

"In all his domestick and social relations he was zealous, kind, generous, liberal, and affectionate He knew of no use for money but as it was subservient to charity, hospitality, and the sciences. But what was most conspicuous in his character, was his calm constancy, his industry, and that indefatigable patience and perseverance, which always enabled him to overcome difficulties.

"He was decidedly a republican. The determination which he often avowed, that he would never accept an office, is an evidence of that disinterestedness of his politicks; but his zeal for his opinions or party did not extinguish his kindness for the merits of his opponents. Society will long remember and regret him; but he will be most lamented by those by whom he was best known."

STANZAS.

> ————————————"Men toil,
> And bards burn what they call their midnight taper,
> To gain, when the original is dust,
> A name."—*Byron.*

What is it? Fancy's glittering crown,
  That lures the young aspirant on,
The laurel chaplet of renown,
  That's gained at last when life is gone.

Yes; youth and hope are ever twain,
  That spring and bud and die united;
For when the flower of one we gain,
  Instead of bloom, we find it blighted.

Life's early dream! 'twas dazzling bright,
  Fit for a poet's glowing story;
Fame open'd to my raptured sight
  Her portals, honour—fortune—glory!

I toiled for all—still beams the light
  That lures me onward, though each flower
Of hope, has felt cold sorrow's blight,
  And wither'd lies in study's bower.

Yet so it is—to reach the goal
  Of bright renown and deathless fame;
Still throbs man's ardent, eager soul,
  To gain when he is dust—a name.

THE FIVE SENSES.

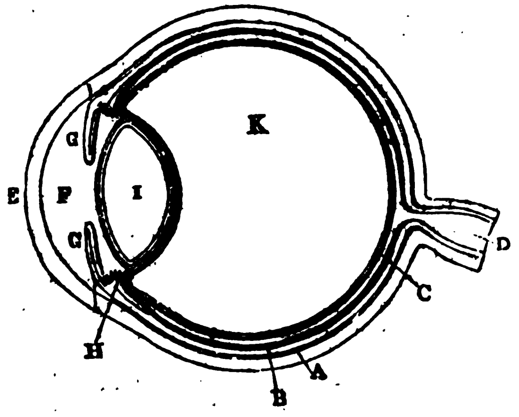
The organs by which the senses of *seeing*, *hearing*, *smelling*, *tasting*, and *touch*, are produced, are the avenues through which alone the soul communicates with the external world. By these the child gradually learns the disregarded fact of its own existence; and when the little one becomes a man, aided by the powers of comparison, combination, and moral perception, he *looks* abroad upon the boundless heavens, *listens* to the mingling melody of woods and fields, *inhales* the fragrant *odours* of a wayside flower, *tastes* the luscious berry or the cooling stream, *feels* the warm *touch* of southern winds, and *believes* what all these things declare,—that "God is;" and further, that God, as the Author of self-knowing beings, is in himself necessarily self-existent.

Without the external senses, the mind could acquire no knowledge, and in the absence of all perception, would live a kind of living death—an unapprehending darkness—a night that "finds no dawn." But God, when he said unto light—BE—"formed the eye;" and when he "made the firmament" as the vehicle of sound, his work was not complete till he had "planted the ear;" and thus with light we kindly have its enjoyment—vision, and with sound we have hearing; and the same also of our other faculties, each one supremely good in itself, and supremely good in its relations; the mind is everywhere addressed by "dim miniatures of greatness ABSOLUTE."

THE SENSE OF SIGHT.

The eye being that organ by which, through the medium of light, we become sensible of the forms and colours of objects, may be conveniently divided into two parts,—the coats of the eye, including the seat of sight, or that which receives the visual impression, called the retina, or expanded nerve; and the humours of the eye, the apparatus by which the rays of light are made capable of forming an impression on the retina, or proper organ of the sense.

We shall explain these in the order best calculated for the easy and clear comprehension of our readers, and then proceed to describe the laws of vision, the motions of the eye, and the various contrivances by which it is defended against injury.

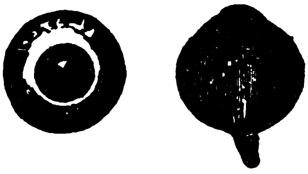


Plan of the Eye, seen in Section.

A. The Sclerotick Coat.
B. The Choroid Coat.
C. The Retina.
D. The Optick Nerve.
E. The Cornea.
F. The Aqueous Humour.
G. The Iris.
H. The Ciliary Processes.
I. The Crystalline Lens.
K. The Vitreous Humour.

I. THE COATS OF THE EYE.

The eye, considered apart from the humours, may be regarded as a globular bag, composed of three coats, with the cornea, and several membranes, which arise from them. These coats are called, first, the SCLEROTICK COAT, giving form and strength to the whole organ; second, the CHOROID COAT, carrying the principal vessels of the eye; and, third, the RETINA, or expanded nerve, which, being the seat of vision, may be considered as the eye itself.



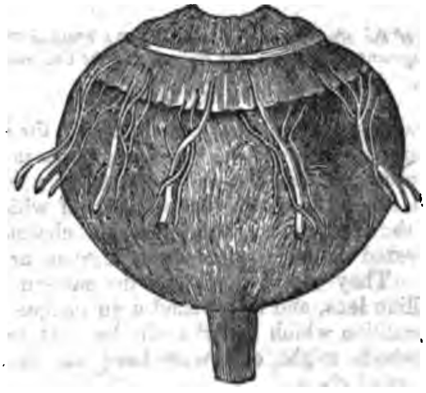
Front and Side Views of the Ball of the Eye.

1. THE SCLEROTICK COAT.

The sclerotick coat derives its name from its hardness. It is a strong tough membrane, close in its structure, and of the "density of tanned leather." It is the "outside coat" of the eye, and closely invests it on all sides except the front, which is covered by the cornea. The globular figure of the eye is preserved, and the delicate structures of the interiour defended, by its strength and inelasticity; and being of a texture which is seldom diseased, it serves as a barrier against external inflammation.

2. THE CORNEA.

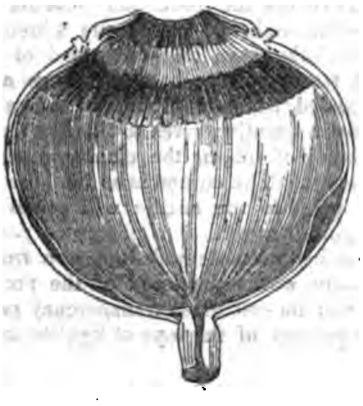
The cornea, or horny coat of the eye, is so named from its being formed of several firm transparent plates. It covers the front, and from its structure and functions might be called the window of the eye. It is colourless, and composed of the most sparkling transparency; between these a pellucid fluid is exuded, which, in proportion as it abounds or diminishes in quantity, gives to the eye the captivating brilliancy of life, or the clammy inexpressiveness of death. The cornea is so hard that in operating, the point of the needle will sometimes turn against it, but it nevertheless possesses great sensibility. Its hardness defends the eye from injury, its sensibility warns the mind of the presence of danger: and its colourless transparency permits an undiluted passage of the rays of light to the retina.



The Eye, after cutting away the sclerotick Coat and Cornea, to shew the vessels of the Choroid Coat: magnified.

3. THE CHOROID COAT.

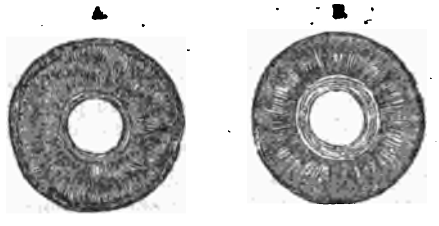
The choroid is the middle coat of the eye, and lies between the sclerotick coat and the retina. It is composed of two layers of membrane, the outer one thickly covered with bloodvessels, and the surface of the inner one adapted for the secretion of a peculiar mucous matter, called the *pigmentum nigrum*, or black paint of the eye. This black paint is spread over the whole interiour surface of the eye, and is in immediate contact with the ramifications of the retina. "Its use," as Sir Charles Bell has elegantly explained, "is apparently to stifle the rays of light, after they have struck on the sensible surface of the retina; for we know that blackness is owing to the absorption of light, as whiteness and colour are to the reflection of it from the surface of bodies. The dark colour of the secreted pigment of the choroid coat, is in some measure peculiar to those animals which see in the brightest light of day; but is wanting, or of a bright reflecting green, or silvery whiteness, in such as prowl by night. The natural conclusion is, therefore, that the pigmentum nigrum subdues the intensity of the impression, while the reflecting colours of the surface in animals which see in the night, strengthen the effect of the light on the surface of the retina, by repelling it. As fishes have the other provisions for seeing in an obscure light, they have also this of the reflecting surface of the tapetum; as it is a secretion of the villous (velvety) surface of the choroid, we see why it becomes somewhat deficient in old men, and sometimes wanting in the degenerate varieties of animals, when entirely deficient, the blood circulating in the vessels of the choroid coat, gives a livid redness to the reflections from the bottom of the eye."*



Section of the Eye, magnified, showing the Ciliary Processes, the Pigmentum Nigrum, the Retina, and the Choroid Coat.

4. THE CILIARY PROCESSES.

Adjoining and within the circle where the sclerotick coat joins the cornea, the choroid coat is folded backwards and inwards, in the form of a circular plaited fringe, the little flat threads of which are called the ciliary processes. Like the choroid they are covered with the pigmentum nigrum, or black paint. They closely embrace the margin of the crystalline lens, and form round it an opaque blackened partition which absorbs all the side rays of light which might otherwise have disturbed the clearness of vision.



A. The Iris, magnified, seen from the front, showing the Radiated Muscle.
B. The same from behind, showing the Orbicular Muscle.

5. THE IRIS.

The Iris is a circular membrane, suspended before the crystalline lens, for regulating the quantity of light which it admits by an aperture in its centre called the pupil It is that coloured disk which we see through the cornea, and which the uninformed regard as the eye itself. The colour of this membrane gives what is called the "colour of the eye;" and, from its variety and beauty, it has been named the iris. The colour depends on the refraction of the light, as it falls upon the velvet-like surface of the membrane, and also upon the degree in which the black paint, which covers its back, is seen through it. In this way the greater or less transparency of the iris causes the numerous varieties of black and hazel-coloured eyes.

The enlarging and diminishing of the pupil, according to the weakness of intensity of the rays of light, is one of the most admirable contrivances in the body, and is effected by the contraction or relaxation of the muscles of the iris.

The iris is composed of two sets of muscular fibres, numerous bloodvessels, and a profusion of nerves. The first set of muscular fibres converge from the circumference of the iris to the circular margin of the pupil: these constitute the "radiated muscle." The second is a ring of fibres, which go round, and indeed form the pupil; it is called the "orbicular muscle." When light enters the eye in greater quantities than is necessary for distinct vision, the excited retina gives warning of the danger, and the nerves immediately stimulate the orbicular muscle to contract, and the radiated one to relax, by which means the size of the pupil is instantly lessened, and a smaller quantity of light admitted. But when in twilight, or shady and dark situations, the retina requires more light for the transmission of a well-defined image to the brain, a relaxation of the orbicular, and a contraction of the radiated muscle takes place, and the pupil is thereby enlarged, if necessary, to its full extent.

6. THE RETINA.

The retina which is the immediate seat of vision, is an expansion of the optick nerve, and forms the innermost of the three coats of the eye. It consists of a thin membrane, upon which is spread a vast number of veins, arteries, and absorbent vessels, and upon these the filaments of the optick nerve are expanded in a network of exquisite delicacy. It does not adhere, but lies in close contact with the choroid coat, and is of the same extent. The vascular and nervous layers of the retina terminate when they reach the edge of the crystalline lens, but the membrane passes onwards over the surface of the lens and forms part of its capsule.

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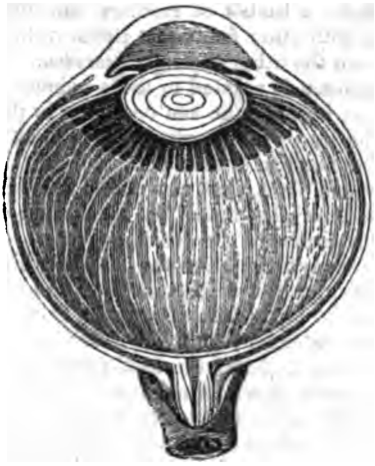
* Bell's Anatomy of the Human Body, Vol. III., p. 256.

II. THE HUMOURS OF THE EYE.

The humours of the eye may be compared to the glasses of a telescope, and the coats to the tube which keeps them in their places. They are three in number.

1. THE AQUEOUS OR WATERY HUMOUR.

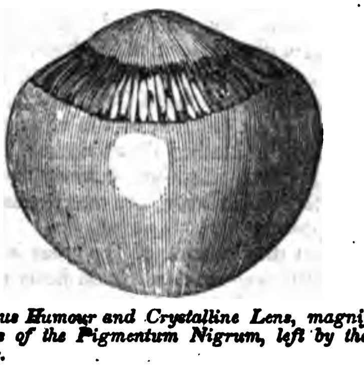
The aqueous humour is a clear colourless fluid resembling pure spring water. It occupies the spaces between the cornea and the crystalline lens. Its chief use appears to be, by distending to preserve the proper curvature of the cornea, and to allow the undisturbed motions of the iris which floats in it.



Section of the Eye, magnified, showing the Crystalline Lens, in its proper situation between the Aqueous and Vitreous Humours.

2. THE CRYSTALLINE HUMOUR, OR LENS.

The crystalline, is the second humour of the eye, and lies immediately behind the aqueous. In shape it resembles a very powerful magnifying glass, flattish in front, but very convex behind. It is in the highest degree transparent, and of considerable density; the centre harder than the circumference. It is held in its situation by a capsule, assisted also by the ciliary processes, and the membrane of the retina. This structure powerfully adapts it for the discharge of its peculiar and important office, that of accurately conveying the rays of light to the nervous surface of the retina.



The Vitreous Humour and Crystalline Lens, magnified, with the stains of the Pigmentum Nigrum, left by the Ciliary Processes.

3. THE VITREOUS OR GLASSY HUMOUR.

The vitreous humour fills the great cavity of the eye. It is of a thick gummy consistence, and is traversed in every direction by numerous pellucid membranes, which support and strengthen it. The chief use of this humour is apparently to keep the crystalline at the proper distance for causing the rays of light to strike the retina, and also to keep the retina spread smoothly before the light.

(The Laws of Vision, showing the mode in which sight is produced in our next.)

NAMES OF THE MONTHS EXPLAINED.

January, the *first* month of the year was so called by the Romans, from *Janus*, one of their deities, to whom they gave two faces; because on the one side the first day of this month looked towards the *new year*, and on the other towards the *old*.

The rigour of the season in this month, requires the figure to appear as if almost clothed in white; because in this month the *earth* is frequently covered with snow.

This figure representing January, is blowing his nails, and under his left arm is a *billet*, for the purpose of denoting the season of the year.

The sign of *Aquarius* the Water-bearer, is added, to show that rain and snow, during this month, fall in abundance. The sun enters the sign *Aquarius* on the 21st of this month.

This month was added to the year of Romulus by Numa Pampilius.

February, the *second* month of the year, was so named by Numa Pampilius, either from the fevers that were so common in Italy about this time, or from the god Frebruus, who presided over the feast held by the Romans to celebrate the obsequies of the dead.

This month is characterized as a young man dressed in cloudy-coloured drapery, from the frequency of the rain and gloomy sky. On his left is added the sign *Pisces*, the *Fishes*. because the sun in passing this celestial sign, denotes the month; and as the fish is an aquatick animal, it alludes to the humidity of the season, from the rain falling about this period in abundance. The sun enters *Pisces* on the 19th of this month.

March, *third* month of the year according to our reckoning, but with the Romans the *first;* which Romulus called *Mars*, from the name of his supposed father.

This month is characterized by a young man of a sprightly aspect, and in armour, because it was dedicated by Romulus to *Mars*. The sign *Aries*, the *Ram*, denotes the beginning of the Roman year. The spade alludes to the season, as being necessary to prepare the ground for sowing. The sun enters the sign *Aries* on the 20th of this month, and makes the *vernal equinox*.

April, the *fourth* month of the year, is so named from the Latin word "*Aperio*," "I open;" because in this month, the earth begins *to open* and send forth her riches.

This month is represented by the ancients as a young man in green, with a garland of myrtle and hawthorn in buds, in allusion to the fields sending forth their verdure. In one hand he has some primroses and violets, in the other the sign *Taurus*, the *Bull*. The sun enters the sign *Taurus* on the 20th of this month.

May, the *fifth* month of the year, was called by Romulus *Maius*, out of respect to the senators and nobles of his city, who were called *Majores*.

Romulus divided his people into two parts, the

Major and *Minor*; the former possessing wisdom and counsel to govern the republick, and the latter arms to defend it.

Others are of opinion that it received its name from *Maia*, the mother of Mercury.

May is represented by a young man dressed in green, embroidered with various flowers, with a garland of the same kind upon his head. In one hand he holds a lute; upon the forefinger of the other a nightingale, with the sign *Gemini*, the *Twins*. The sun enters *Gemini* on the 21st of this month. The green-flowered dress and the garland signify the gayness of the fields, and the general face of nature at this season of the year.

June, the *sixth* month of the year, is said to have been so named from a temple of the goddess *Juno;* others, however, are of opinion, that it took its name from *Junius Brutus*, who expelled Tarquin the kingdom on the 1st of this month.*

June is represented by a young man clothed in a lighter dress than the preceding figure, to indicate the commencement of summer. Upon his head is a garland of flowers, upon his arm is a basket of the fruits of the season, and in his right hand is the sign *Cancer*, the *Crab*. On the 21st of this month the sun enters *Cancer*, and makes the *summer solstice*.

July, the *seventh* month of the year, was so named from the Latin word *Julius*, the surname of Cesar, who was born in this month.

Mark Antony first gave this month the name of July, in honour of his illustrious friend, Julius Cesar; before which time it was called *Quintilis*, as being the fifth month of the (Roman) year, as had been established by Romulus.

July is represented by a young man in a light jacket, eating cherries, with his face and bosom sunburnt; on his head is a wreath of wild thyme; a scythe on his shoulders, a bottle at his girdle, and at his side the sign *Leo*, the *Lion*.

July, by the Saxons, was called *Hay-monat;* that is, the *Hay month*, because in this month they usually mowed and made their *hay*. The sun enters the sign *Leo* on the 23d of this month.

August, the *eighth* month of the year, was dedicated to the honour of Augustus Cesar, because in this month he was created consul, triumphed three times in Rome, subjected Egypt to the power of the Romans, and put an end to the civil wars.

This month is characterized by a young man of a fierce and cheerful countenance, with a flame-coloured garment; upon his head a garland of wheat and rye; upon his arm a basket of ripe fruits; at his belt, a sickle; and at his side, the sign *Virgo*, the *Virgin*. The sun enters *Virgo* on the 23d of this month.

September, in the Roman calendar, was so called from the Latin word *Septem*, seven, which by the Romans was reckoned the seventh month of the year; but in the present almanack, it is the *ninth* month from the beginning of the year.

This month is represented by a young man dressed in purple, of a merry and cheerful countenance; upon his head a wreath of white and purple grapes; under his left arm a bundle of oats; in his right a *cornucopia* of the ripe fruits of the season—as pears, peaches, &c.; and in his right hand the sign *Libra*, the *Balance*.

He is dressed in purple, being reckoned the prince of the months, by producing a copious provision of all the necessaries of life.

This month was, for some time, called *Germanicus*, from the emperour of that name; and *September*, from being the *seventh* after March. The sun enters *Libra* on the 23d of this month.

October, the *tenth* month in order from January, derives its name in the same manner as the preceding month, from *Octo*, eight, being the *eighth* month from March in the Roman calendar.

This month is represented by a young man dressed in a garment of yellow and carnation; upon his head a garland of oak leaves and acorns; in one hand he holds a basket of medlars, mushroons, and chestnuts, with other fruits that ripen at this time of the year; in the other the sign *Scorpion*.

The garment is painted in these colours,—a kind of chestnut, because the sun declining in the *winter solstice*, the juices of the plants begin to shrink, and their leaves become of this *teint*.

This month, for a time, was called Domitian, from the emperour of that name, but afterwards was cancelled by a decree of the Roman senate. The sun enters the sign *Scorpio* on the 23d of this month.

November, the *eleventh* month of the year, is so called from its being the *ninth* month from March in the Roman calendar; and the following month is so named from its being the *tenth* from March; from the Latin words *novem*, nine, and *decem*, ten.

This month is represented by a young man, whose drapery is the colour of the leaves when they begin to fall; round his head is a garland of olives with the fruit; in his left hand bunches of parsnips and turnips, signifying the products of this month; and in his right hand is the sign *Sagittarius*, the *Archer*.

The garland of olives is a sign of their maturity, and the time of their being gathered. The sun enters *Sagittarius* on the 22d of this month.

November is generally said to be the most gloomy month of the year.

December, the *twelfth* and last month of the year, was so named by Romulus in the Roman calendar, which means there the tenth and last month of the Roman year.

This month is characterized by an old man, with an austere and fearful aspect, clad in an Irish rug, or coarse frieze, girt upon him; upon his head no garland, but three or four nightcaps, and over them a Turkish turban; his nose red; his mouth and beard clogged with icicles; at his back is a bundle of holly, ivy, or mistletoe; and holding in furred mittens a hatchet and the sign *Capricornus*, the *Goat*.

The hatchet is an emblem of the season, it being now the month for cutting down timber, as the virtue of the trees at this time concentrates in the trunks, and, for that reason, are more desirable for different purposes.

The earth at this season of the year is bereft of all its ornaments, and for this reason he is represented without a garland.

The sun enters the tropick of *Capricorn* on the 21st, and forms the *winter solstice*.

THE CEYLONESE SYSTEM OF THE UNIVERSE.

The Cingalese are strictly materialists. The most learned among them consider life and intelligence as identical, and as seated in the heart, radiating thence to all parts of the body; being uncreated, and without beginning, capable of infinite modifications, and liable to total annihilation. God and demons, together with every thing possessing animal existence, they consider similar beings. According to their creed, a god may become a man or an animalcule, and the two latter may become gods; for, that one spirit pervades the universe, unites all animated beings to itself, and to one another. These changes, which are almost infinite, are bounded only by annihilation, which they consider the climax of beatitude. They maintain that plants have life, but exclude them from the cycles of their metempsychosis. They acknowledge this system to be a mystery, and therefore are at no pains to explain it.

They further maintain that the universe is eternal, but in a state of constant decay and reproduction. A vast rock is the centre of their system, above which are twenty-six heavens, and beneath it eight principal, and a hundred and thirty-six lesser hells. The twenty-six heavens are set apart for different orders of accepted souls, according to their rank and pretensions. They are provided with palaces and gardens, and every thing that art or nature can supply, fitted to afford the most exquisite physical enjoyment.

The eight principal hells are hollow metallick squares, composed of different alloys of the common metals, and without any openings. In each there is an intense fire, producing perpetual combustion without any supply of fuel. They differ in kind, but not in degree, the lowest being the largest and hottest, and the punishments inflicted in them being the severest and most protracted. The doomed are punished in these hells according to their crimes. For each sin there is a particular kind of punishment, and every one is detailed with most appalling distinctness. The condemned are represented as suffering intense hunger and thirst, their torments being heightened by the expectation of appeasing their raging appetites, in attempting which they swallow nothing but fire. Their tormenters are sinners like themselves, in the forms of caffers, dogs, and crows of monstrous aspect, armed with frightful teeth and claws. The most wicked are fleshy and fat, and thus attract their tormentors, while those who have sinned least, being thin and unsightly, possess little or no charms for their hungry tormentors.

The one hundred and thirty-six smaller hells, though similar to the eight principal, and situated immediately round them, differ from them greatly in the degrees of their punishment, which, in them, though of immense duration, is not eternal. Here the sinner undergoes an entire expurgation, after which commences his metempsychosis.

The Locarnantarika-narikay is the general receptacle for utterly corrupt souls, a place of extreme punishment, and where the most iniquitous persons are consigned, after they have paid the common debt of nature. This hell, which is described by their theological writers with a minuteness so distinct and powerful, as to realize the most frightful picture of eternal torments, is represented as an immense hollow, composed of walls of clay, without either light or heat, a place of unendurable privation. It is only the most heinous offenders that are doomed to the horrours of this infernal receptacle, such as a parricide, the murderer of a priest or of a teacher, a scorner of Boodhoo, or of the gods, they who oppose the common worship, and who injure or profane their sanctuaries. The wretched beings who are consigned to this abode of everlasting torment, are left in darkness, where there is not the slightest visual perception. Here they are exposed to the most intense cold, and visited by the perpetual cravings of an appetite so ravenous and insatiable that they bite, tear, and devour each other. Their sufferings, however, do not end here, for those who are devoured instantly revive; indeed, the principle of life never for a moment becomes extinct, but the body is no sooner disunited than it is restored to its original form and capability of endurance, changing its abode from one place to another in this capacious world of wo, without mitigation and without end.

BOODHISM.

These notions of heaven and hell are to be found in the Boodhist scriptures, Boodhism being the national religion of Ceylon. The antiquity of this religion, the quarter in which it originated, and the direction in which it spread, are interesting subjects of inquiry, but would be out of place here: I may say, however, in a few words, that the pretensions of the Boodhists themselves, on the subject of the antiquity of their religion, are of two kinds, one probable, the other absurd in the extreme. In the latter, they connect it with the most monstrous fables of their system of the universe, giving it an existence in ages so remote as to set all calculation at defiance. Their other notion is much more rational, and comes freely within the scope of credibility. They who maintain this view, reckon the date of Boodhism from the time it was restored by the Boodhist divinity whom they now worship, who lived only about six hundred years before the commencement of the Christian era. If these latter pretensions be just, and there is no fair ground for questioning them, it will, of necessity, follow, that the Brahminical religion is the most ancient of the two; and this the Boodhists themselves do not deny, as they admit that the latter religion was in full operation when their Boodhoo appeared to revive their own religion, which had previously become extinct. The whole subject of the controversy, as to which has the higher claim to antiquity, the Brahminical or Boodhist religion, is one of great interest, but of extreme difficulty.

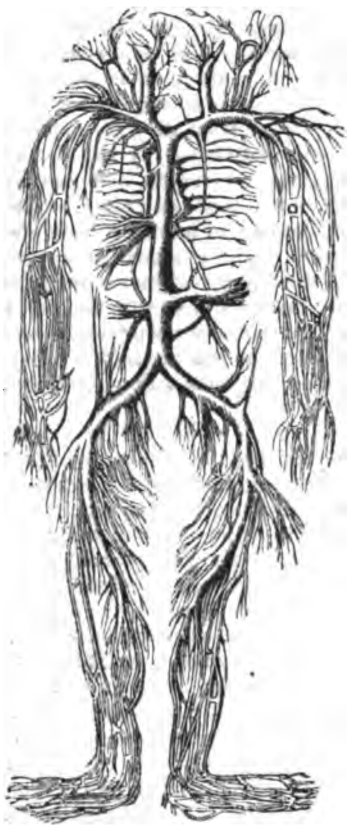
POETRY.

MY NATIVE LAND.

Though joys in other climes be found,
  There's purer joy at home,
And I the world might wander round,
  In distant climes might roam:
But never to my soul be known,
  Upon a foreign strand,
The peace, the hope, the pride I own,
  In this my native land.

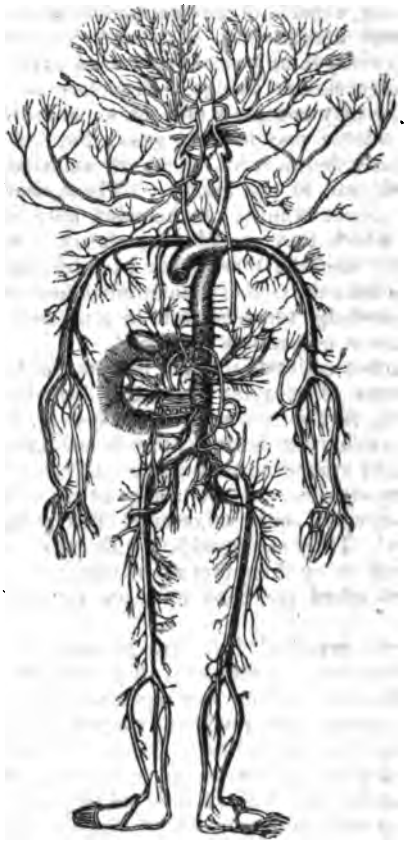
Though other fields may be as green,
  And other skies as blue;
And other faces fair be seen,
  And hearts be found as true;
Oh! be it ruled by mildest rule,
  Or swayed by lawless hand,
With joy, with pride, whate'er betide,
  I'll love my native land.

CIRCULATION OF THE BLOOD.



VENOUS SYSTEM,

Or principal veins of the body; the large vein, in the centre, being the VENA CAVA, into which all the minor veins empty themselves.



ARTERIAL SYSTEM,

Or principal arteries of the body; the main artery, in the centre, being the AORTA, communicating with the heart, where it appears cut off.

"The proper study of mankind is man."—POPE.

Were we not surrounded, as we are on every side, by the interesting and innumerable wonders of the creation, which bounteous nature presents to our view in the animal, vegetable, and mineral kingdoms, all clearly and absolutely demonstrating the preexistence of a FIRST GREAT CAUSE; the most skeptical, if he would deign to contemplate but for a moment the curious mechanism and contrivance evidenced in his own frame, would, we believe, be constrained to admit the utter ignorance and helplessness of man, and his own incapacity to comprehend the infinity of his Creator. In taking a glimpse at the economy of our complicated frame, we are first struck with the extraordinary form of man, so peculiarly adapted to his situation, and the elements with which he is surrounded, combining the most perfect muscular symmetry and beauty, with activity and strength, in a higher degree than any other animal, and being, in fact, physically constituted—"Lord of the creation;" and physically, as well as morally, calculated to rule over all the inferiour animals in the creation. No animal, not even a lion, can brook the determined eye of an intelligent man; and the wildest and most ferocious beast of the forest will tremble at his voice.

Upon taking a view of as much as can be shown by anatomy of the internal economy of our frame, and confined as our knowledge necessarily is upon this subject, we cannot but be struck with amazement at the apparent complexity of the various parts, and the adaptation of each to the necessities of the whole; arteries, veins, muscles, nerves, and bones, being combined in such a way as would seem almost to defy the research of the anatomist; and the whole covered with that natural silken garment, the skin, without which the frame would appear deformed and repulsive; while each organ, amidst the complex mechanism of this wonderful machine, appears to perform its functions with the greatest regularity, and in the most simple manner. And, notwithstanding the abuse it often suffers from man's imprudence, seems inherently to possess the elastick power of regaining its healthy state, and performing its functions as usual.

To this elasticity of compensatory power in the body, the circulation of the blood would appear mainly to contribute.

The circulation of this vital fluid throughout the frame, seems to have excited great attention and inquiry in all ages; but, from the time of Hippocrates and Galen, down to the seventeenth century, mankind appeared to have been in perfect ignorance respecting it. Many were the theories started; but it was preserved for Dr. Harvey, to discover the circulation of the blood, and its passage from the heart through the lungs, and then back to the heart, and thence propelled throughout the body.

In a future article we will explain the general constituent parts of the blood. We shall now describe its circulation; and, in order to aid us in this interesting inquiry, we present our readers with an engraving, showing the bloodvessels of the human frame; the one represents the ARTERIAL SYSTEM, or the blood which is propelled by the heart through the *arteries*, and through the body; and the other representing the VENOUS SYSTEM, or the veins, through which the blood returns, after having nourished the body; but, in order to make ourselves better understood, we shall briefly describe the process.

The food after passing into the stomach, by its muscular action and the gastrick juices, becomes an amalgamated pulpy mass called *chyme*, which, passing into the bowels, the nutritive portion, a milky fluid, called *chyle*, is separated and taken up by the lacteal absorbent vessels, (the refuse portion of the food being passed off by the stimulus of the bile;) the lacteals conduct the chyle to the thoracick duct, which empties itself into the left subclavian vein, where it meets and mixes with the blood returning from the left arm and left side of the head (*see engraving*); and the subclavian vein then empties itself into the vena cavæ, or great vein, into which all the veins empty themselves; and, passing into the right auricle of the heart, and then into the right ventricle, from which it is propelled through the pulmonary artery into the lungs; and it then circulates through the innumerable small vessels which are diffused through the lungs, in which it meets the air vessels, and, by the action of the atmosphere, undergoes a change, and becomes the red or arterial blood; this operation is so extremely minute as to be very little understood. The blood now having been supplied with the necessary nutrition from the lacteals, as before explained, and having been vivified by the action of the lungs and atmosphere, is ready to nourish the body; and, accordingly, is conducted by the pulmonary vein to the left auricle, whence it passes into the left ventricle, which, being distended, contracts, and, with great force, throws the blood through the aorta, or large artery, and through all the minor arteries to the extremities; when it passes throughout the whole body, giving out nutrition as required: by this means the blood appears to be deprived of a great portion of its red colour, and becomes purple or venous blood, and is returned by the veins into the vena cavæ, there to meet the chyle as before, and again pass through the lungs to be rearterialized and become fit for circulation. Thus, by means of this important action of the blood, every part of the body lives, becomes warm, and is nourished; the warmth of the body being increased in proportion to the velocity of the circulation. What is commonly called the pulse, is the alternate action of the ventricles of the heart called systole and diastole, each contraction of the ventricle forming a distinct pulsation; hence the velocity with which the blood circulates is discovered by feeling one of the arteries of the wrist, which communicates to the finger, by the sense of touch, the number of contractions of the ventricles in a given time.

We do not expect all our readers to be anatomists; but we trust that the above general description will not only be acceptable, but useful and instructive—useful, because even a superficial knowledge of our physical economy will often enable us, by adopting simple precautions, and following nature, to avoid many evils and diseases—and instructive, because from it we may draw many philosophical inferences, highly improving to our moral condition.

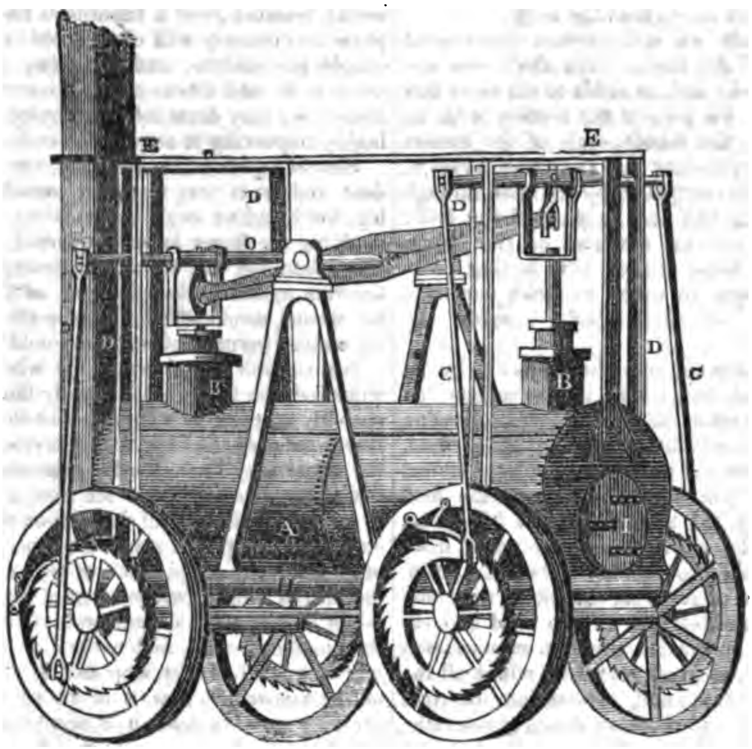
Should a person, for instance, meet with an accident, and, as is very frequent, wound a vein in the leg, the bleeding might immediately be stopped by applying the finger *below* the wound, pressing on the vein; because the blood, circulating back through the vein *upwards*, the pressure of the finger *below* the wound would effectually stop the blood flowing, till a more permanent bandage could be applied.

Not so with the *arteries;* for when an artery is wounded, the living blood rapidly flows, and must be speedily stopped by a pressure *above* the wound, or *nearer towards the heart*, in whatever part of the body the artery may be; and the pressure must be continued for several hours: for instance, in a wound of one of the arteries of the arm or finger, the pressure must be applied above the wound by a little pad of folded linen, and a piece of tape made tight round the arm or finger; or for want of this, a large knot might be tied with a handkerchief and applied upon the bleeding vessel, and made tight upon the arm, which will effectually stop the bleeding. Should it not be known whether it is an artery or vein, by pressing *above* or *below* it, it may be soon ascertained which way the blood runs, and the bandage applied accordingly; and thus a person's life may be saved by himself or a bystander, until surgical aid can be procured.

If we religiously and philosophically contemplate the wonderful circulation of the blood—the heart to propel it through the body—the lungs to vivify it with the air—the valves to prevent the return of the blood back through the veins—the admirable position of the arteries, all placed as near the bones as possible, so as to be protected from all injury—in the hands, for instance, deeply seated, and passing inside near the bone, while the veins, less important, pass over the wrist on the outside—we must be constrained to admit that our frames present to us a piece of contrivance, ingenuity, and mechanism, beyond our comprehension, and incontrovertibly proving the exceeding wisdom and omnipotence of the grand Architect of the universe.

LOCOMOTIVE STEAM-CARRIAGES.

The nature and power of steam are now well understood, and have indeed been long known by those who have studied the physical sciences. When water is exposed to the action of heat, it expands and assumes the gaseous state called *steam*. In this state, it is extremely light and expansive, like air; and like it, may be reduced into less space by pressure; and resists also the force which compresses it. As steam possesses the elasticity of air, and as it may be condensed by the application of cold, it is obvious that it may be used as a moving force, and that it possesses power to an *unlimited* extent. The medium, or instrument, in which it is usually so applied, is called the steam-engine, and



LOCOMOTIVE STEAM-CARRIAGE.

constitutes one of the most useful benefits, which science has conferred on the arts for practical purposes. In its earliest forms, it was used to raise water, although early efforts were made to adapt it to propel vessels. The marquis of Worcester, in the 17th century, has the credit of inventing the steam-engine; but he did not apply it to any useful purposes, nor did he cause any great attention to it. Some time later, one Savary gave an account of its power, and even received a patent for it. In his machine, the elasticity of steam was used to force water up a pipe. But so imperfect was his plan, that there was a great waste or loss of steam, and a great consumption of fuel. A great improvement was made in the engine by Savary and others, in 1705, which consisted chiefly in a metallick cylinder, in which a piston, air-tight, was capable of moving from top to bottom. The top was open and the bottom closed. The piston was attached to a piston-rod, or chain which connected it with the end of the working beam. This was supported on a gudgeon, and the end opposite to that to which the piston-rod was attached was loaded, and of course the pump-rod attached to it was at the bottom of the well from which the water was to be pumped. The cylinder is filled with steam till all the air is driven out. The piston was at the top of the cylinder. The steam in the cylinder is condensed by means of a jet of cold water; and a vacuum is produced in the cylinder. The atmosphere presses on the top of the piston, and forces it to the bottom of the cylinder. The pump-rod at the other end of the working beam is drawn up—it makes a stroke, and a quantity of water is pumped out of the well or mine Steam is again let in below the piston in the cylinder, the vacuum removed, and the piston rises to the top, because of the load at the other end of the beam. The cylinder is again filled with steam and condensed, the piston forced down, more water pumped up, and thus the engine continues to act as long as it is supplied with steam.

The steam-engine is now applied to almost every species of manufacture as a substitute for labour. At first, it was used only to raise water, though early efforts were made, as already stated, to propel vessels. Savary proposed to make water, raised by it, turn a wheel in a vessel which should carry paddle wheels on the outside; and Watt, who made improvements in the steam-engine, towards the close of the last century, declared that, with proper encouragement and leisure, he could apply it to propel boats, as has since been done.

But steam is also employed to propel carriages on land. For this purpose, the wheels of the carriage are set in motion by the engine, in the manner wheels of a steam-boat are made to turn. The tire of the wheels is made of iron; and steam-carriages run on tracks of iron. Rail-roads are parallel bars of iron, laid either level or with a gentle and uniform slope; and steam has been chiefly applied to locomotion on roads of this kind. The locomotive machines have been much improved within a few years past. They now drag after them several cars, or carriages, equal to seven times their own size or weight.

The great advantages of rail-way conveyance are now fully appreciated in this country, indeed, railways are multiplying to an astonishing extent, and wherever they are practicable, they seem destined to supersede all other modes of land conveyance.

Fifty companies have been incorporated in the state of New York alone, with capitals amounting in the aggregate to about thirty-four and a half millions of dollars. And most of the other states are proportionably not behind New York.

The engraving is intended to represent a steam-carriage invented by Howard, of Baltimore, for running on *curved* rails. The object is to have the axle adapted to a curve road. The usual beam is divided in the centre, and one end is made to play in the other; and thus the hind wheels will be sure to follow in the tract of the fore wheels. To this beam, the boiler A, with cylinders B B are attached. The boiler may answer the purpose of this beam, by placing it on beds H H, under which the axles G G move horizontally, round centre bolts. There are guides or supports D D, at each side of the boiler, attached to the axles and moving with them; to these are openings for the vertical motion of the ends of bars (00) of the piston-rods: the guides are also connected (by pairs) at top by an iron bar, with a bolt in the centre, connecting it with an iron frame E E which passes lengthwise from each end of the boiler to which it is fastened, and which serves to keep the guides in a vertical position. The bolt is directly over the bolt of the wagon-bed and the centre of the cylinders, so that when the axle moves round the wagon-bed bolt, the guides move with it, and make the bar connected with them revolve round the bolt in the frame over the boiler. There is also a balance-bearer F supported from the boiler-bed, to preserve a uniform motion, which is connected with the shackle-bar of each piston-rod, which allows a vertical motion, and a horizontal motion at the same time is occasioned by an alteration of the direction of the wheels. The other object of Mr. Howard is to have the outer wheels go faster than the inner. Thus, the axle revolves as is common in rail-way cars, and the carriage wheels revolve on the axle; but at the end of the axle is a ratchet-wheel (L) fastened, to which is attached the rod C, from the shackle-bar, and not to the carriage wheel K. There is also a catch and spring striking the teeth of the ratchet-wheel, and uniting them as one, except when it is necessary that one carriage wheel, in describing a larger circle, should go faster than the other, or faster that the axle and ratchet-wheel.

NIAGARA FALLS.

We are indebted to a correspondent, for a sketch of the Falls of Niagara. We are able, however, to publish only an extract from it, which contains a new, original, and certainly very descriptive illustration of the Falls, that will indemnify the New York reader for the perusal.—Ed.

"Goat Island, whose area is about seventy acres, and which in this remote region, is valued by its owner at as many thousand dollars, separates the American from the Canadian Falls. To give a New Yorker who has not seen them, some idea of the extent of Niagara Falls, we shall suppose a line drawn from the top of St. Paul's steeple, 160 feet high, to the top of Trinity Church steeple opposite Wall street; and that the water comes pouring over this line in one continued sheet, and falling in Broadway. Now let this sheet be viewed from a corresponding elevated position on the Brooklyn heights, and we have a good representation of the Falls on the American side, as viewed from the Canada shore. The length of this sheet of water, falls little short of one quarter of a mile.

"Again, let the line from the top of St. Paul's and Trinity be continued to the top of the flag-staff on the Battery, forming an obtuse angle at the head of Wall street. And supposing one hundred times more water to pour over this line, viz., from St. Paul's to the flagstaff, than over the former; viewed from the same position, we may then have some idea of the extent of the Horseshoe Falls on the Canada side—the centre of which appears like the pouring over of the deep blue ocean. Following the curve formed by this sheet of water, the length is somewhat more than half a mile.

"It is in the cloud of spray arising from this fall, that the beautiful rainbows formed both by the sun and moon are to be seen to the best advantage. In the morning and evening they are presented above, and at noon thrown on the sea of white, milk-like foam, produced by the cataract below!

"The noise of the Falls is so intense, that few strangers can sleep soundly in their vicinity for some nights. And after viewing them from the different positions on both sides of the river, many persons become much disturbed by awful dreams—such as being suspended over the chasm, or falling into it, which start them in terrour from their partial sleep. These, however, soon disappear.

"Those who wish to avoid disappointment, must first view this wonder of nature from the Canada shore. The Niagara river below the Falls, is sometimes raised seven or eight feet above the ordinary level, owing to strong winds blowing from the direction of Buffalo, which dash the waters of Lake Erie over the Falls with immense impetuosity.

"Canada Pavilion, Sept. 5."

THE TEMPERANCE DAYSTAR.

Long and gloomy was the night
Hanging on our mental sight,
While intemperance, dark and drear,
Fill'd with storms our atmosphere.

But, behold! a star arise,
Brilliant, in these Western skies!
Coming, like redeeming power,
In the last despairing hour.

Ye who would your children save,
From a drunkard's awful grave,
Point them to a prospect fair—
'Tis the temperance morning-star.

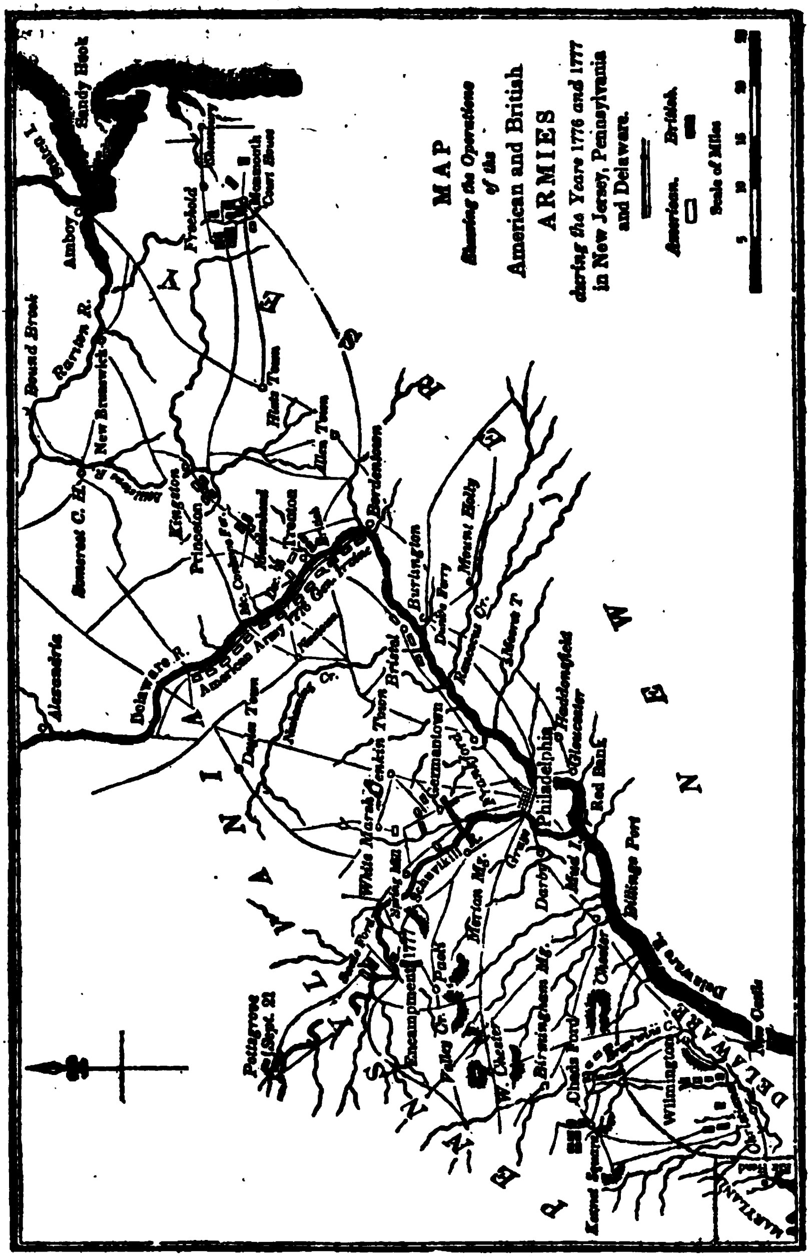
Ye, who would redeem a friend
On whom earthly hopes depend;
Sit not down in deep despair—
Hail the temperance morning-star.

Ye who plough the foaming brine,
See the star of temperance shine:
Rising in your moral sky,
Like the Dayspring from on high.

Toiling through a stormy night
How you wish'd for morning light—
Brighter, brighter, brighter far,
Shines the temperance morning-star.

Onward speed thy radiant way,
Harbinger of dawning day!
Nations hail thee from afar—
Hail Columbia's morning-star.

Temp. Recorder.



REVOLUTIONARY BATTLES ILLUSTRATED. No. 6.

OPERATIONS IN NEW JERSEY, DELAWARE, AND PENNSYLVANIA.

At the time of the Declaration of Independence, July 4. 1776, Washington occupied the city of New York and the western extremity of Long Island with seventeen thousand troops, principally raw recruits. On the 22d August, 24,000 British troops, under Lord Howe and his brother Sir William Howe, landed on Long Island near the Narrows, about nine miles from New York. On the 27th, a very hot battle was fought among the hills and woods on Long Island, in which the Americans were defeated. On the 29th, under the cover of the night, they joined the rest of the army in New York. The British now pressed the Americans with so much activity, that the latter were compelled to evacuate the city about the 15th of September. Several hot skirmishes took place on the island, and a battle at White Plains occured on the 28th of October. The Americans withdrew as far as Peekskill on the Hudson, and crossed the river at that place early in November. Washington's design was to harass the British army under Cornwallis in New Jersey. Fort Washington surrendered to the British with about two thousand men on the 16th. Washington reached Hackensack, soon after, with about five thousand troops. Cornwallis, the British general, entered New Jersey, opposite Yonkers above Fort Lee, November 18th. The American army passing through Paterson, reached Newark, Nov. 24th, and New Brunswick Dec. 1; the British close in pursuit were at Amboy. Washington, perceiving it to be the evident design of the enemy to push on to Philadelphia, hastened on through Princeton and reached Trenton Dec. 30. The American force at this time was very inferiour, and altogether insufficient to make a stand against the advancing enemy. The time the militia enlisted for was short, and many of them went home. Whole companies deserted, and the army was soon so small that Washington knew every man by name. They were so nearly naked and ragged too, and looked so miserable that their own countrymen were almost ashamed to join them. The enemy pressed them so closely, that large numbers went over to them, alleging that "they might as well be ruined one way as another." They crossed the Delaware, and week after week they were driven up and down its banks with scarcely a hope of relief. The bare and sore feet of the infantry left the frozen ground bloody behind them. The British cavalry traversed the country, with their large, fine horses, and elegant uniforms. But the few horsemen of the American army, were mounted upon wretched, worn-out horses, so lean and frightful, as to be the constant theme of ridicule with the British soldiers. The whole were ridiculed as a company of "ragamuffins."

These were "the times that tried men's souls:" and the American people began to fear, that they would be crushed in their struggle for freedom. Many were entirely disheartened, and numbers basely deserted the cause of their country at this hour of need, and went over to the enemy. But the glorious Washington remained firm and undismayed. While other minds were shaken with doubt and fear, he remained steadfast and resolved. Looking deeply into the future, and placing his trust in Heaven, he seemed to penetrate the clouds that shed their gloom upon the land, and to see beyond them a brighter and a happier day. He always appeared before his soldiers with a smile, and fought or fasted with them, as necessity required. He inspired all around him with courage, and wrote many letters to Congress, to the governours of the states, to his generals and to his friends, entreating them to make great exertions to send him assistance. These appeals were not without effect. Philadelphia, in a very short time furnished him with a regiment of fifteen hundred noble fellows who were resolved to support him to the last.

The British now withdrew into winter quarters. They occupied the villages for many miles up and down, on the eastern bank of the Delaware. Washington was below them, on the other side. But they were tired of pursuing him; and they believed that his army would soon dwindle away, and the whole country be conquered. They scarcely took the trouble to set guards at night. But Washington watched them like a lynx. On the night of December 25th, he crossed the Delaware again, with a large part of his army. The night was dark, stormy and cold. The river was crowded with broken ice, rushing together, and sweeping down upon its swift current. But notwithstanding these difficulties and dangers, the river was passed by the American troops, and they marched on to Trenton. They entered that place at eight in the morning, and met a large body of Hessians, who however resisted only for a short time. Five hundred cavalry escaped; but some fine cannon and about a thousand prisoners were taken by the Americans. Cornwallis, who lay a few miles off, thought so little of the American "ragamuffins," at this time, that he mistook the noise of the cannon at Trenton for thunder. In the night of the second of January '77, apprehending an attack from the British, Washington started off for the mountains of New Jersey. He reached Princeton at daybreak, and fell upon the British there so suddenly and so fiercely, that sixty of them were killed, and three hundred taken prisoners. Washington soon reached Morristown, and there, as well as at Middlebrook or Boundbrook formed a camp. Here he commenced re-organizing his army for the campaign of '77. Congress, notwithstanding the extreme jealousy which had prevailed in relation to the danger of a military ascendency, were constrained in the present alarming aspect of affairs, to invest Washington with dictatorial powers. The proceedings were as follows:—

"*December 27th*, 1776. This Congress, having maturely considered the present crisis; and having perfect reliance on the wisdom, vigour, and uprightness of General Washington, do hereby

"Resolve, That General Washington, shall be, and he is, hereby vested with full, ample, and complete powers to raise and collect together in the most speedy and effectual manner, from any or all of these United States, sixteen battalions of infantry, in addition to those already voted by Congress; to appoint officers for the said battalions of infantry; to raise, officer, and equip three thousand lighthorse, three regiments of artillery, and a corps of engineers, and to establish their pay; to apply to any of the states for such aid of the militia as he shall judge necessary; to form such magazines of provisions, and in such places, as he shall think proper; to displace and appoint all officers under the rank of brigadier-general, and to fill up all vacancies in every other department in the American army; to take, wherever he may be, whatever he may want for the use of the army, if the inhabitants will not sell it, allowing a reasonable price for the same; to arrest and confine persons who refuse to take the continental currency, or are otherwise disaffected to the American cause; and return to the states, of which they are citizens, their names, and the nature of their offences, together with the witnesses to prove them.

"That the foregoing powers be vested in General Washington, for aid during the term of six months from the date hereof, unless sooner determined by Congress."

Although these powers constituted Washington, in all respects a *Dictator*, according to the Roman sense of that word, yet he never exercised them any farther than the exigency of the case demanded. In consequence of the very great efforts that were made by every friend of the American cause, militia crowded from all parts to Washington's camp at Middlebrook and Morristown. His army in the spring of '77 amounted to fifteen thousand men. He was so strongly intrenched among the hills, that the English dared not attack him. The following summer was spent in marching to and fro in New Jersey, without effecting much. But in July the British mustered a force of sixteen thousand men, at New York. These left there, soon after, with a large fleet. An attack was expected everywhere upon the coast; but no one knew whither they were bound. Washington moved his army towards Philadelphia. The British fleet at last, entered Chesapeake Bay, and landed their men at Turkey Point. They left that place September 3d, and marching towards Philadelphia, came up with a portion of Washington's army, at a place called Chad's Ford, on the river Brandywine. On the 11th, they had a warm skirmish, and the Americans were driven back. Congress removed to Yorktown, Virginia; and Howe entered Philadelphia, in great triumph, September 26th.

The Americans were defeated again at Germantown, on the 4th of October. The battle began early in the morning, when nothing could be seen farther than thirty yards. During the whole action, which lasted nearly three hours, the firing on both sides was directed by the flash of each other's guns. The smoke of the cannon and musketry, mingled with the thick fog, rested over the armies in clouds. The Americans saved their artillery, even to a single cannon, which had been dismounted. General Greene displayed most remarkable coolness in this action.

About this time, a smart action was fought at Red Bank, on the Jersey side of the Delaware, seven miles below Philadelphia. The Americans had erected batteries here, and upon Mud Island, in the middle of the river. Nothing, therefore, belonging to the British, could pass up and down between their camp at Philadelphia, and their fleet in the river below. Two ranges of chevauxdefrise were placed in the channel. Howe sent down two thousand Germans, under Colonel Donop, to attack the Red Bank redoubt, which was defended by four hundred men. This number was so small, that half the redoubt was left vacant, and a line was drawn through the middle of it. The enemy came on very fiercely with a brisk cannonade; entered the empty part of the redoubt, and shouted for victory. But the garrison poured out such a tremendous fire, that the Germans, after a brief conflict fled, with the loss of four hundred men, and their brave commander Donop.

Washington retired into winter quarters at Valley Forge, sixteen miles from Philadelphia. His army might have been tracked by the blood of their feet, in marching without shoes or stockings, over the hard, frozen ground. Thousands of them had no blankets, and were obliged to spend the night in trying to get warm, instead of sleeping. They erected log huts for lodgings. For a fortnight they nearly starved—sometimes they were without bread and without meat. A person passing by the huts of these poor fellows in the evening, might have seen them through the crevices, stretching their cold hands over the fire, and a soldier occasionally coming in or going out, with nothing but a blanket on his shoulders. "No pay, no clothes, no provisions, no rum," said they to each other. But to their praise be it spoken, they loved Washington and their country too well, to desert them in these trying times.

During the winter, the Americans contrived some machines which were filled with gunpowder, and sent down the river Delaware, near to the city. They expected that these would explodo, and among the British shipping; they did, however, no damage, but the British were very much alarmed, and accordingly, fired cannon at every thing they saw floating in the river. This afforded the Americans a fund of amusement. Francis Hopkinson, one of the signers of the Declaration, and a man of great wit, wrote the following humorous ballad upon th subject:—

BATTLE OF THE KEGS.

Gallants, attend, and hear a friend
  Trill forth harmonious ditty:
Strange things I'll tell, which late befell
  In Philadelphia city.

'Twas early day, as poets say,
  Just when the sun was rising,
A soldier stood on log of wood,
  And saw a thing surprising.

As in a maze he stood to gaze,
  The truth can't be denied sir,—
He spied a score of kegs, or more,
  Come floating down the tide, sir.

A sailor too, in jerkin blue,
  This strange appearance viewing
First rubb'd his eyes, in great surprise,
  Then said, "Some mischief's brewing.

"These kegs to hold the rebels bold,
  Pack'd up like pickled herring;
And they're come down t' attack the town,
  In this new way of ferrying."

The soldier flew, the sailor too,
  And, scar'd almost to death, sir,
Wore out their shoes, to spread the news,
  And ran till out of breath, sir.

Now up and down, throughout the town,
  Most frantick scenes were acted;
And some ran here, and others there,
  Like men almost distracted.

Some fire cried, which some denied,
  But said the earth had quaked;
And girls and boys, with hideous noise,
  Ran through the streets half naked.

Sir William he, snug as a flea,
  Lay all this time a snoring,
Nor thought of harm, as he lay warm,
  The land of dreams exploring.

Now in a fright he starts upright,
  Awaked by such a clatter:
He rubs both eyes, and boldly cries,
  "Alas! what is the matter?"

At his bedside he then espied
  Sir Erskine at command, sir;
Upon one foot he had one boot,
  And the other in his hand, sir.

"Arise, arise!" Sir Erskine cries;
  "The rebels—more's the pity—
Without a boat, are all afloat,
  And ranged before the city.

"The motley crew, in vessels new,
  With Satan for their guide, sir,
Pack'd up in bags, or wooden kegs,
  Come driving down the tide, sir.

"Therefore prepare for bloody war—
  These kegs must all be routed,
Or surely we despised shall be,
  And British courage doubted."

The royal band now ready stand,
  All ranged in dread array, sir,
With stomach stout, to see it out,
  And make a bloody day, sir.

The cannons roar from shore to shore,
The small arms make a rattle;
Since war's began, I'm sure no man
E'er saw so strange a battle.

The rebel dales the rebel vales,
With rebel trees surrounded,
The distant woods, the hills and floods,
With rebel echoes sounded.

The fish below swam to and fro,
Attack'd from every quarter;
"Why sure," thought they, "the d——'s to pay.
'Mongst folks above the water."

The kegs, 'tis said, though strongly made,
Of rebel staves and hoops, sir,
Could not oppose their powerful foes,
The conquering British troops, sir.

From morn to night, these men of might
Display'd amazing courage,
And when the sun was fairly down,
Retired to sup their porridge.

A hundred men, with each a pen,
Or more, upon my word, sir,
It is most true, would be too few,
Their valour to record, sir,

Such feats did they perform that day,
Against these wicked kegs, sir,
That years to come, if they get home,
They'll make their boasts and brags, sir.

The treaty between France and America was concluded February 6th, 1778, by which the former agreed to join arms with the latter against the British, and occasioned prodigious joy in the army at Valley Forge, and over the whole country. General Clinton, hearing of this, thought it necessary to remove to New York. He accordingly evacuated Philadelphia on the 18th of June, to the great joy of the inhabitants, and took up his march through New Jersey. Washington broke up his quarters at Valley Forge, and immediately pursued him. A hot battle was fought on the 28th, near Monmouth courthouse, which did not cease till night. Washington slept upon his cloak under a tree, expecting more fighting in the morning; but the British marched off in the night. Sixty of their soldiers were found dead on the battle-field without wounds. Fatigue and the excessive heat had killed them. Washington afterwards passed on to Morristown, and the highlands of the Hudson.

FRANCONIA NOTCH.

In the depths of Franconia woods, a beautiful and spacious hotel has recently been built, distant four miles from any other habitation or spot of cultivated ground. It stands in the midst of the primitive forest. On every side, is to be heard the angry murmur of crystal brooks pouring from mountain heights, with innumerable meanders, and everywhere are to be seen the mightiest trees bowing their lofty tops in melody with the whispering breeze. In front, is the greatest natural curiosity in New Hampshire, if not in New England. Upon the side, and very near the summit of an elevated mountain, whose base is within a few rods of the hotel, is a perfect profile of the human countenance. It is on a ledge of solid granite, and is as complete as if carved with the chisel of the artist. It is with the greatest difficulty that an individual can go within a hundred feet of it; at a distance, it is said to bear a striking resemblance to Dr. Franklin. In the rear, rises another beautiful range of mountains, the highest peak of which is called Mount Lafayette. From the summit of this mountain, the prospect is grand and beautiful, hardly inferiour to that of Mount Washington. Upon its sides are delightful beds of moss, surpassing all description. It is easy of access, as there is a good path well interspersed with springs even to the uttermost peak. It is not unfrequent in the ascent, that a herd of deer are seen bounding across the path, and flocks of partridges and pigeons are startled up from the circumjacent bushes. Near the north end of the hotel, is a lake which affords a noble spectacle when its silvery surface is kissed by the uninterrupted rays of the sun. Here, you can see the wanton pickerel frisking about in delightful gambols, and the dull turtle basking fearlessly upon the projecting rocks. Upon the farther side of this lake, at the set of sun, several guns are fired which produce a splendid echo. For a long time, the sound reverberates from cliff to cliff, resembling the long and angry peals of thunder which forebode a summer's shower. Where this secluded building now stands, not a tree was felled eleven weeks ago. A sacred silence reigned over the place and nought but the rattling of the stagecoach interrupted its permanency. Within doors, the house is finished with neatness and elegance and well divided into sleeping chambers and parlours. In addition to the common niceties of a city, the table is often provided with pickerel and venison. In the parlour, I found a great variety of newspapers. The landlord is interesting, musical, social, and attentive. His numerous stories are always aptly introduced and finished with a remarkable cogency. The landlady is polite, affable, and maternal. No two persons could be better adapted to their situation. The traveller remote from home, and here, as it were, secluded in a cloister, needs something more than his usual meals. He must have relaxation, mental as well as bodily; he requires amusement, kindness, and attention. And here he finds them in abundance. Although the season for travelling is nearly past, yet, the wonderful curiosities, the diversified grandeur of the scenery, and the seclusion of its situation would amply repay any individual for his time and trouble in visiting one of the most hospitable inns in the state.

N. H. Patriot.

TO A REDBREAST.

Little bird, with bosom red,
Welcome to my humble shed.
Courtly dames, of high degree,
Have no room for thee or me.
Pride and pleasure's fickle throng
Nothing mind an idle song.
Daily near my table steal,
While I pick my scanty meal.
Doubt not, little though there be,
But I'll cast a crumb to thee:
Well rewarded, if I spy,
Pleasure in thy glancing eye—
See thee, when thou'st eat thy fill,
Plume thy breast, and wipe thy bill
Come, my feather'd friend, again:
Well thou know'st the broken pane.
Ask of me thy daily store:
Go not near Avaro's door.
Once within his iron hall,
Woful end shall thee befall.
Savage, he would soon divest
Of its rosy plumes thy breast;
Then, with solitary joy.
Eat thee, bones and all, my boy.

GENERAL MANAGEMENT OF SLEEP.

Continued from p. 191.

It now becomes a question at what hour we should retire to rest, how long our rest ought to continue, and when it should be broken in the morning. These points I shall briefly discuss in the order in which they stand.

It is not very easy to ascertain the most appropriate hour for going to bed, as this depends very much upon the habits and occupation of the individual. Labourers, and all hard-wrought people, who are obliged to get up betimes, require to go to rest early; and in their case, nine o'clock may be the best hour. Those who are not obliged to rise early, may delay the period of retiring to rest for an hour or two longer; and may thus go to bed at ten or eleven. These are the usual periods allotted among the middle ranks of life for this purpose; and it may be laid down as a rule, that to make a custom of remaining up for a later period than eleven must be prejudicial. Those, therefore, who habitually delay going to bed till twelve, or one, or two, are acting in direct opposition to the laws of health, in so far as they are compelled to pass in sleep a portion of the ensuing day, which ought to be appropriated to wakefulness and exertion. Late hours are in every respect hurtful, whether they be employed in study or amusement. A fresh supply of stimulus is thrown upon the mind, which prevents it from sinking into slumber at the proper period, and restlessness, dreaming, and disturbed repose inevitably ensue. Among other things, the eyes are injured, those organs suffering much more from the candlelight, to which they are necessarily exposed, than from the natural light of day.

With regard to the necessary quantity of sleep, so much depends upon age, constitution and employment, that it is impossible to lay down any fixed rule which will apply to all cases. Jeremy Taylor states that three hours only in the twenty-four should be devoted to sleep. Baxter extends the period to four hours, Wesley to six, Lord Coke and Sir William Jones to seven, and Sir John Sinclair to eight. With the latter I am disposed to coincide. Taking the average of mankind, we shall come as nearly as possible to the truth when we say that nearly one third part of life ought to be spent in sleep: in some cases, even more may be necessary, and in few, can a much smaller portion be safely dispensed with. When a person is young, strong and healthy, an hour or two less may be sufficient; but childhood and extreme old age, require a still greater portion. No person who passes only eight hours in bed, can be said to waste his time in sleep. If, however, he exceeds this, and is, at the same time, in possession of vigour and youth, he lays himself open to the charge of slumbering away those hours which should be devoted to some other purpose. According to Georget, women should sleep a couple of hours longer than men. For the former he allows six or seven hours, for the latter eight or nine. I doubt, however, if the female constitution, generally speaking, requires more sleep than the male; at least it is certain that women endure protracted wakefulness better than men, but whether this may result from custom is a question worthy of being considered.

Barry, in his work on Digestion, has made an ingenious, but somewhat whimsical calculation on the tendency of sleep to prolong life. He asserts that the duration of human life may be ascertained by the number of pulsations which the individual is able to perform. Thus, if a man's life extends to 70 years, and his heart throbs 60 times each minute, the whole number of its pulsations will amount to 2,207,520,000; but if, by intemperance, or any other cause, he raises the pulse to 75 in the minute, the same number of pulsations would be completed in 56 years, and the duration of life abbreviated 14 years.

Arguing from these data, he alleges that sleep has a tendency to prolong life, as, during its continuance, the pulsations are less numerous than in the waking state. There is a sort of theoretical truth in this statement, but it is liable to be modified by so many circumstances, that its application can never become general. If this were not the case, it would be natural to infer that the length of a man's life would correspond with that of his slumbers; whereas, it is well known, that too much sleep debilitates the frame, and lays the foundation of various diseases, which tend to shorten rather than extend the duration of life.

Those who indulge most in sleep, generally require the least of it. Such are the wealthy and luxurious, who pass nearly the half of their existence in slumber, while the hard-working peasant and mechanick, who would seem, at first sight, to require more than any other class of society, are contented with seven or eight hours of repose—a period brief in proportion to that expended by them in toil, yet sufficiently long for the wants of nature, as is proved by the strength and health which they almost uniformly enjoy.

For reasons already stated, more sleep is requisite in winter than in summer. Were there even no constitutional causes for this difference, we should be disposed to sleep longer in the one than in the other, as some of the circumstances which induce us to sit up late and rise early in summer, are wanting during winter; and we consequently feel disposed to lie longer in bed during the latter season of the year.

The hour of getting up in the morning is not of less importance than that at which we ought to lie down at night. There can be no doubt that one of the most admirable conducives to health is early rising. "Let us," says Solomon, "go forth into the fields; let us lodge in the villages; let us *get up early* to the vineyards; let us see if the vine flourish—if the tender grape appear—if the pomegranates bud forth."

Almost all men who have distinguished themselves in science, literature, and the arts, have been early risers. The industrious, the active-minded, the enthusiast in the pursuit of knowledge or gain, are up betimes at their respective occupations; while the sluggard wastes the most beautiful period of life in pernicious slumber. Homer, Virgil, and Horace are all represented as early risers: the same was the case with Paley, Franklin, Priestly, Parkhurst, and Buffon, the latter of whom ordered his *valet de chambre* to awaken him every morning, and compel him to get up by force if he evinced any reluctance: for this service the valet was rewarded with a crown each day, which recompense he forfeited if he did not oblige his master to get out of bed before the clock struck six. Bishops Jewel and Burnet rose regularly at four o'clock. Sir Thomas More did the same thing; and so convinced was he of the beneficial effects of getting up betimes, that, in his "Utopia," he represented the inhabitants attending lectures before sunrise. Napoleon was an early riser; so was Frederick the great, and Charles XII.; so is the duke of Wellington; and so in truth, is almost every one distinguished for energy and indefatigability of mind.

Every circumstance contributes to render early rising advisable to those who are in the enjoyment of health. There is no time equal in beauty and freshness to the morning, when nature has just parted with the gloomy mantle which night had flung over her, and stands before us like a young bride, from whose aspect the veil which covered her loveliness, has been withdrawn. The whole material world has a vivifying appearance. The husbandman is up at his labour, the forest leaves sparkle with drops of crystal dew, the flowers raise their rejoicing heads towards the sun, the birds pour forth their anthems of gladness, and the wide face of creation itself seems as if awakened and refreshed from a mighty slumber. All these things, however, are hid from the eyes of the sluggard; nature, in her most glorious aspect, is, to him, a sealed book; and while every scene around him is full of beauty, interest, and animation, he alone is passionless and uninspired. Behold him stretched upon his couch of rest! In vain does the clock proclaim that the reign of day has commenced! In vain does the morning light stream fiercely in by the chinks of his windows, as if to startle him from his repose! He hears not—he sees not, for blindness and deafness rule over him with despotick sway, and lay a deadening spell upon his faculties. And when he does at length awake—far on in the day—from the torpor of this benumbing sleep, he is not refreshed. He does not start at once into new life—an altered man, with joy in his mind, and vigour in his frame. On the contrary, he is dull, languid, and stupid, as if half recovered from a paroxysm of drunkenness. He yawns, stretches himself, and stalks into the breakfast parlour, to partake in solitude, and without appetite, of his unrefreshing meal—while his eyes are red and gummy, his beard unshorn, his face unwashed, and his clothes disorderly, and ill put on. Uncleanliness and sluggishness generally go hand in hand; for the obtuseness of mind which disposes a man to waste the most precious hours of existence in debasing sleep, will naturally make him neglect his person.

The character of the early riser is the very reverse of the sloven's. His countenance is ruddy, his eye is joyous and serene, and his frame full of vigour and activity. His mind, also, is clear and unclouded, and free from that oppressive languor which weighs like a nightmare upon the spirit of the sluggard. The man who rises betimes, is in the fair way of laying in both health and wealth; while he who dozes away his existence in unnecessary sleep, will acquire neither. On the contrary, he runs every chance of losing whatever portion of them he may yet be in possession of, and of sinking fast in the grade of society—a bankrupt both in person and in purse.

The most striking instances of the good effects of early rising, are to be found in our peasantry and farmers, whose hale complexions, good appetites, and vigorous persons, are evidences of the benefit derived from this custom, conjoined with labour; while the wan, unhealthy countenances and enfeebled frames of those who keep late hours, lie long in bed, and pass the night in dissipation, study, or pleasure, are equally conclusive proofs of the pernicious consequences resulting from an opposite practice.

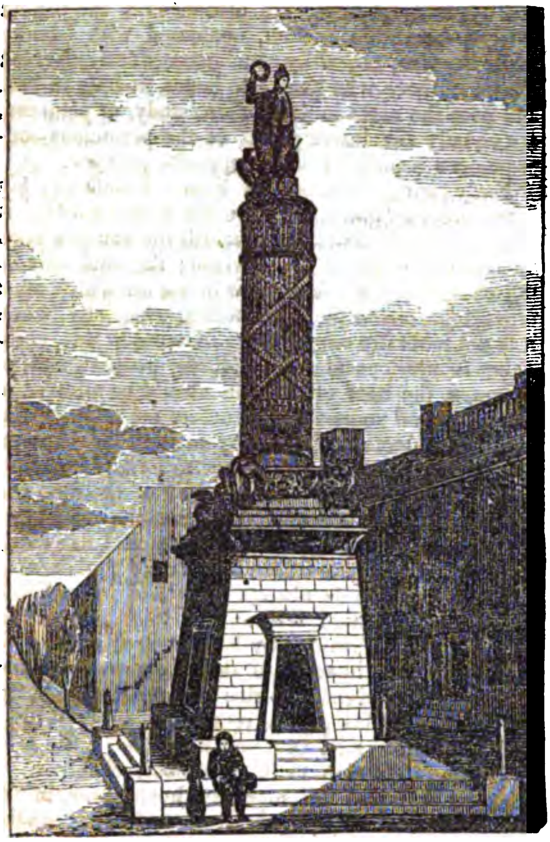
Early rising, therefore, is highly beneficial; but care should be taken not to carry it to excess. It can never be healthful to rise till the sun has been for some time above the horizon; for until this is the case, there is a dampness in the air which must prove injurious to the constitution, especially, when it is not naturally very strong. Owing to this, early rising is injurious to most delicate people; and, in all cases, the heat of the sun should be allowed to have acquired some strength before we think of getting out of doors. No healthy man in the summer, should lie longer in bed than six o'clock. If he does so, he loses the most valuable part of the day, and injures his own constitution. Persons subject to gout, should always go to sleep early, and rise early. The former mitigates the violence of the evening paroxysm, which is always increased by wakefulness; and the latter lessens the tendency to plethora, which is favoured by long-protracted sleep

It is common in some of the foreign universities, to go to bed at eight, and rise at three or four in the morning; and this plan is recommended by Willich in his "Lectures on Diet and Regimen." Sir John Sinclair, in allusion to it, judiciously observes, "I have no doubt of the superiour healthiness, in the winter time, of rising by daylight, and using candlelight at the close of the day, than rising by candlelight, and using it some hours before daylight approaches." It remains to be ascertained by which system the eyes are least likely to be affected.

Dr. Franklin in one of his ingenious essays, has some fine observations on early rising; and makes an amusing calculation of the saving that might be made in the city of Paris alone, by using the sunshine instead of candles. This saving he estimates at 96,000,000 of livres, or £4,000,000 sterling. This is mentioned in a satirical vein, but probably there is a great deal of truth in the statement. Indeed, if people were to go sooner to bed, and get up earlier, it is inconceivable what sums might be saved; but, according to the absurd custom of polished society, day is, in a great measure, converted into night, and the order of things reversed in a manner at once capricious and hurtful.

To conclude: the same law which regulates our desire for food, also governs sleep. As we indulge in sleep to moderation or excess, it becomes a blessing or a curse—in the one case recruiting the energies of nature, and diffusing vigour alike over the mind and frame: in the other, debasing the character of man, stupifying his intellect, enfeebling his body, and rendering him useless alike to others and himself. The glutton, the drunkard, and the sloven bear the strictest affinity to each other, both in the violation of nature's laws, and in the consequences thence entailed upon themselves. What in moderation is harmless or beneficial, in excess is a curse; and sleep carried to the latter extreme, may be pronounced an act of intemperance almost as much as excessive eating or drinking.

BATTLE MONUMENT, BALTIMORE.



The Battle Monument was erected in 1815, at Baltimore, to the memory of those who fell bravely defending that city from the attack of the British, at North Point and the bombardment of Fort M'Henry, on the 12th and 13th of September, 1814. It cost about 60,000 dollars.

For perfect propriety of design, as well as for the masterly execution of its various parts, it is not equalled by any work of similar character in this or any other country. It was planned by Maximilian Godefroy, who presented the drawings to the city, and directed its construction. It is entirely of pure white marble, and rests upon a square *plinth* or *terrace* of the same material, forty feet square, and four feet high, at each angle of which is placed erect a brass cannon, having a ball, as it were, issuing from its mouth. Between the cannon and along the verge of the platform, extends a railing or chevaux-defrise of brass-headed spears, the beauty and effect of which are much heightened by the disposal, at equal distances, of eight *fasces*, forming a part of and supporting the railing. These fasces are composed of corresponding spears bound with iron fillets. The whole protected by massive chains in festoons, suspended from posts of granite, enclosing a walk of five feet on every front.

From the platform rises a square Egyptian basement, entirely rusticated, to indicate strength. It is composed of eighteen layers of stone, to signify the number of the states which formed this confederation at the period of the event which the monument commemorates. The style of this basement is especially consecrated to tombs. It is surmounted by a cornice, each of the four angles of which bears an elegantly executed *Griffin*, with an eagle's head, as an emblem of the eagle of the Union.

The decorative hieroglyphick, having been dedicated to the sun, and often employed by the ancients in front of their temples, is, therefore, regarded as the emblem of glory and veneration. A winged globe adorns each centre of the Egyptian cornice, symbolical of eternity and the flight of time. On each of the four fronts of the basement is a false door, in the antique style, closed with a single tablet of black marble—imparting the character of a cenotaph, with the remains of the dead deposited therein. Three steps to ascend to these doors, are intended to indicate the three years of the war.

We now carry the description up to the principal part of the monument, which presents the appearance of a fasces, (symbolical of the Union,) the rods of which are bound by a fillet—on this are inscribed in letters of bronze, the names of the brave, who were killed in defending their city; and who, by their glorious death, strengthened the bands of the Union. Around the top of the fasces are bound a wreath of laurel, and a wreath of cypress, the first expressive of glory, the other sepulchral and mourning. Between these wreaths, in letters of bronze, are inscribed the names of the officers who perished at the shrine of glory. They are:—

JAMES LOWRY DONALDSON,
Adjutant 27th regiment.

GREGORIUS ANDREE,
Lieutenant 1st rifle battalion.

LEVI CLAGETT,
3d Lieutenant Nicholson's artillerists.

The names of the non-commissioned officers and privates, who were killed in the action, as inscribed on the fillet binding the fasces, are:—

John Clemm,
T. V. Beaston,
S. Haubert,
John Jephson,
T. Wallace,
J. H. Marriot, of John,
E. Marriot,
Wm. Ways,
J. Armstrong,
J. Richardson,
Benjn. Pond,
Clement Cox,
Cecelius Belt,
John Garrett,
H. G. M'Comas
Wm. M'Clellan,
John C. Bird
M. Desk,

Danl. Wells, Jr.
John R. Cop,
Benjn. Neal,
C. Reynolds,
D. Howard,
Uriah Prosser,
A. Randall,
R. R. Cooksey,
J. Gregg,
J. Evans,
A. Maas,
G. Jenkins,
W. Alexander,
C. Fallier,
T. Burneston,
J. Dunn,
P. Byard,
J. Craig.

The fasces is ornamented with two basso-relievoes—the one on the south front, representing the battle of North Point, and the death of General Ross, the British commander—the other on the north front, representing a battery of Fort M'Henry at the moment of the bombardment. On the east and west fronts are *Lachrymal urns*, emblematick of regret and sorrow. On the south part of the square base, beneath the basso-relievo is this inscription in letters of bronze;—

BATTLE
OF NORTH POINT,
12th September, A. D. 1814;
And of the Independence of the United States,
the thirty-ninth.

On the north front, beneath the basso-relievo on that side, is the following inscription, also in letters of bronze:—

BOMBARDMENT
OF FORT McHENRY,
13th September, A. D. 1814;
And of the Independence of the United States,
the thirty-ninth.

The basement and fasces thus described, form together thirty-nine feet, to show that it was founded in the thirty-ninth year of the Independence of the United States.

The colossal, but exquisitely beautiful statue, which surmounts the fasces, is a female figure, representing the city of Baltimore—upon her head is a mural crown, emblematick of cities; in one hand she holds an antique rudder, symbolick of navigation; and in the other she raises a crown of laurel, as, with a graceful inclination of the head, she looks towards the fort and field of battle. At her feet, on the right, is the Eagle of the United States; and near it a bomb, commemorative of the bombardment.

The height of the monument, including the statue, is fifty-two feet, two inches.

A single glance at this monument, strikes the beholder with admiration, and suffices to convince him, that its various parts have been designed and combined by the effort of talent and genius of the first order. But if the architect, fully impressed with the moral dignity and beauty of his subject, has conceived a plan worthy of his exalted genius, the master-hand of the sculptor has been no less happy in communicating to the pure marble the most admirable proofs of the power of his chisel and the perfection of his art. The attitude of the noble statue, and the natural flow of its drapery, afford a true personification of ease, grace, and dignity: the proportions are strikingly beautiful and correct, and its execution, including all the sculptured parts of the monument, is that of the finished artist. This elegant structure presents a glorious testimony of the patriotism, devotion, and gratitude of the citizens of Baltimore, and a no less gratifying evidence of the rapid advancement of the arts in this country.

TO YOUNG MEN.

There is no moral object so beautiful to me as a conscientious young man! I watch him as I do a star in the heavens: clouds may be before him, but we know that his light is behind them, and will beam again; the blaze of other's prosperity may outshine him but we know that, though unseen, he illumines his own true sphere. He resists temptation not without a struggle, for that is not a virtue, but he does resist and conquer; he hears the sarcasm of the profligate and it stings him, for that is the trial of virtue, but he heals the wound with his own pure touch. He heeds not the watchword of fashion, if it lead to sin; the Atheist who says, not only in his heart, but with his lips, "there is no God," controls him not, for he sees the hand of a creating God and reverences it, of a preserving God and rejoices in it. Woman is sheltered by fond arms and guided by loving counsel, old age is protected by its experience, and manhood by its strength; but the young man stands amid the temptations of the world like a self-balanced tower. Happy, he who seeks and gains the prop and shelter of Christianity.

Onward, then, conscientious youth! raise thy standard and nerve thyself for *goodness.* If God has given thee intellectual power, awaken it in that cause; never let it be said of thee, he helped to swell the tide of sin, by pouring his influence into its channels. If thou art feeble in mental strength, throw not that poor drop into a polluted current. Awake, arise, young man! assume the beautiful garments of virtue! It is easy, fearfully easy to sin, it is difficult to be pure and holy. Put on thy strength, then, let thy chivalry be aroused against errour, let *truth* be the lady of thy love—defend her.

Southern Rose.

LYCEUMS.

We have received a pamphlet entitled, "Proceedings of the Education Convention, held at Westchester, August 18th, 1835: with an address from the Pennsylvania Lyceum, organized at the meeting, to the citizens of the state." It seems that nine associations, three towns, and two schools, were represented in the Convention, which consisted of 38 members, and 26 volunteer delegates. The Convention proceeded to organize the State Lyceum, whose "objects shall be the advancement of education throughout the state, especially through the medium of schools and lyceums, and to co-operate with lyceums in other states, for the general diffusion of useful knowledge." The address states, that "the institutions constituting both the means and subjects of education at present existing in our country, are found in about 60 colleges, 500 academies, 3,000 lyceums, 50,000 common schools, and 2,000,000 of families, embracing 4,000,000 of children, who are proper subjects of school education. To these may be added some 40 or 50 seminaries, for the specifick object of law, medicine, or theology." All these institutions, it is proposed to *improve* by means of the lyceum system.

The institution of lyceums, it is stated, is founded upon voluntary, mutual, social, moral, and republican principles. It is designed to reach in its operations families, schools, villages, counties, states, and nations, in distinct, primary, and general departments. It is also designed to furnish each association, from the national to the family lyceum, with books, cabinets, and apparatus; and to encourage amongst them severally and jointly, the pursuit of useful knowledge, and general improvement—by conversations, discussions, lectures, addresses, experiments, &c.

adapted at the various times and places, to the capacities and necessities of the various parties interested. To enlighten the mind, and improve the heart, is certainly a glorious purpose; and the lyceum system, could it be properly organized and conducted, seems admirably adapted to this noble object. But we fear that the system will either be greatly retarded or entirely ruined, by the management and interference of private interest. It seems to us, that the organization of state lyceums, before the subordinate departments are carried into execution, is premature, and will prove abortive. Organize the primary associations first, and says Grimke, "the district and state lyceums may be expected as a matter of course."

OUR FIRST PAGE.

It is our intention to embellish this page usually, with a large engraving illustrative of American history, or American landscape scenery. We had procured a fine original drawing of a *Negro cabin in Virginia*, by J. G. Chapman, Esq., of this city, for the express purpose of embellishing the first page of the present part, but were disappointed in obtaining the accompanying article, from the pen of a Virginian gentleman, in time for our purpose. This very pretty picture shall be forthcoming in our next.

NOTICES, REVIEWS, &c.

From the N. Y. Mirror, which is authority worthy all acceptation in such matters, we take the following notice of the "Study of Medicine," just published by the Harpers.

GOOD'S STUDY OF MEDICINE.

Study of Medicine, by John Mason Good, M. D., F. R. S., Mem. Am. Phil. Soc., and F. L. S. of Philadelphia. Improved from the author's manuscripts, and by reference to the latest advances in Physiology, and Pathology, and Practice by Samuel Cooper, Professor of Surgery in the University of London, etc. Sixth American, from the last English edition, with Notes, by A. Sidney Doane, A. M. M. D.; to which is prefixed, a Sketch of the History of Medicine, from its origin to the commencement of the nineteenth century. By J. Bostock, M. D., F. R. S. In two volumes. New York: published by Harper and Brothers. 1835.

EDITOR'S PREFACE.

"The sixth American edition of the 'Study of Medicine,' is reprinted from the fourth English edition, which was issued in London early in the present year: beside the ample additions of Professor Cooper, it contains between four and five hundred notes of a practical character, derived principally from the writings of American physicians. It was with extreme diffidence, and with no little dread of appearing presumptuous, that the American editor assumed the responsibility of adding notes to a work characterized by such profound learning and deep research; but he was encouraged by the consideration, that although the 'Study of Medicine' has been used as a text-book for several years in this country, and is thought to be indispensable to every medical library, it contains but few allusions to the important results of American practice; while some forms of disease peculiar to this country, and the contributions of American physicians to physiology, pathology, therapeuticks, and the materia medica, are, generally speaking, unnoticed in it. In fulfilling his duty, the editor has attempted to divest himself of local feelings; to consider the physicians of the United States as belonging to one family; to be just to all; and to present the results of their experience with fairness. How far he has succeeded, may be seen by referring to the notes marked with the letter D, for which he alone is accountable. The desire, however, of printing the new edition in such a form as to place it within the reach of every one, and the constant inquiries for the book which, to speak technically, has been out of print for many months, obliged the publishers to limit the editor both as to space and time. This fact will account for the brevity in which many important topicks have been treated, and also for some omissions.

"To those of his professional brethen who have so kindly tendered the results of their experience, the editor returns his warmest acknowledgments and thanks; and to no one are these due more than to a personal friend of Doctor Good, Professor J. W. Francis, of New York, not only for many practical remarks of great importance, but also for the use of his extensive library of rare books, and for a free access to his valuable cabinet of anatomical preparations, which, in many cases, has afforded the editor an opportunity of verifying the statements of the text. Prefixed to the 'Study of Medicine,' the reader will find a new 'History of Medicine,' by the learned and eloquent Bostock; it forms a happy introduction to the main work, and its perusal will richly reward the careful student."

"The great author of this work has made the study of medicine a pleasure rather than a labour. He brought to his work a comprehensive mind, a large store of theoretical and practical knowledge, and set down with an honest intention and clear views to arrange his matter. He uses no more technicalities than were indispensably necessary for a proper vehicle for his thoughts, and makes no scruples of showing what the science has not reached, as well as what it has accomplished.

"To this work is attached 'Bostock's History of Medicine,' an excellent historical treatise, a labour of great research and merit, displaying a philosophical mind groping its way through the ages of antiquity, and bringing down the results of experience to modern times. No man can be truly wise in what *is*, without knowing something of what *has been*, in art or the professions. The history even of errours, assists in getting at truth. This sketch will save the student much labour—while it leads him to deep reflections. The scholars of the new world must avail themselves of the master productions of the old. They find the address of the calif of the ninth century to the Arabians, in most respects true. 'My followers,' said he, 'I have purchased for you the Grecian manuscripts, and you may now pluck the golden fruit of the garden of the Hesperides without fear of the dragon.' We not only pluck the fruit but transplant the tree, and find it 'grow in our soil, and ripen in our sky;' and the product is not less, nor is the flavour deteriorated by being acclimated here. Dr. Doane is yet in the early green leaf of manhood, but has found time, by the strictest economy of it, to perform many valuable labours in moments stolen from his professional duties, or rather by using up all his hours, called those of relaxation. He has given to his profession, 'Blandin's Anatomy;' and 'Maygrier's Illustrations of Midwifery,' which has within two years passed through four editions. He has also translated the large 'System of Anatomy by Professor Meckel,' from the German, a laborious task, 'Scoutetten on Cholera,' 'Chausner on the Arteries,' and still more recently Dupuytren's celebrated 'Lectures on Surgery,' all these before he commenced the editorship of 'Good's Study of Medicine,' which has now made its appearance in two large octavo volumes, greatly improved, with original notes.

It would require a much larger space than we can at present command to notice the various important additions of Dr. Doane. He has drawn his materials from the results of the practice of the most eminent prescribers in the healing art, scattered through the remotest districts of the country. Of course Dr Rush's opinions are to be found under many sections of the book: the clinical views of the most eminent men of his day, and of those who have enlightened the medical art since, are also here impartially and faithfully recorded. Bayley, Physic, Hosack, Chapman, Dewees, Barton, Mott, Francis, Stevens, Paine, Warren, Jackson, Beck, Ware, Cartwright, Rogers, Smith, Channing, Dudley, Potter, Hays, Mitchill, Eberle, Beaumont, Condie, Bell, Calhoun, Stearns, and many others will be found in the numbers of those from whom he has selected; and we are in duty bound to affirm that the value of the original work has been thus greatly enhanced. It was long due to the services of our American physicians and surgeons that a more enduring record of their improvments in physick and surgery should be drawn up, than is preserved in the fugitive pages of periodical journals or pamphlets; and we are favoured with such a memorial by Dr. Doane's edition. Indeed, so earnestly seems the editor to have been to add interest to this work; that we find some of the latest European investigations on pathology and practice, made known abroad within the last few months, noticed by him. The latest English criticks have pronounced the last edition of the 'Study of Medicine,' a library of existing state of medical knowledge; and we think that this copy by the Harpers, will be recognised by every competent judge as the most ample and able exposition of practical medicine ever offered to the American publick."

DISCUSSION OF UNIVERSALISM.

Mr. P. Price, No. 2 Chatham Square, N. Y., has just issued in a neat little volume of 300 pages, a series of letters, which were interchanged between Rev. Ezra Stiles Ely, D. D., a distinguished Presbyterian Divine, and Rev. Abel C. Thomas, equally distinguished among his own people as a prominent advocate of the Universalist faith, devoted to the discussion of the theological tenets which so widely separate their respective denominations. To any one who has a desire to examine this subject we can cordially recommend this volume as containing the main positions on both sides more clearly stated, happily condensed, and forcibly argued, than in any work of the kind (and they are not few) with which we are acquainted. As a specimen of critical acumen and logical deduction, the letters are worthy the attention of the general Reader.—*New Yorker.*

NEGRO CABIN, IN VIRGINIA.

VISIT TO A NEGRO CABIN IN VIRGINIA.

[Extract from a Journal, kept by a Gentleman, who travelled through Virginia some years since.]

14th. W—— is a Justice of the peace, and was compelled to leave us to-day, in order to attend the session of the county court. I took his dog and gun to see what sort of sport his fields afforded; and after a walk of some hours, feeling inclined to rest, I seated myself on the body of a fallen tree, and had been there but a few minutes, when my attention was attracted by the following conversation carried on behind a dead hedge, by which I was screened from the view of the parties engaged in it:—

"I say, Tom; is you been do what you say?"

"I done fo'git what 'twas."

"Dah now! Didn't I tell you futto ax Ned futto len' me his possum-dog to-night?"

"Well, sho' nough!"

"Well, now, what I gwine do fo' dog?"

"You do'wan' no dog to-night."

"What fur I don't?"

"Caze you gwine to cawn-shuckin'."

"No indeed—I gwine catch possum fo' Jenny."

"What business you keep runnin' a'ter Jenny? She eat all yo' possum an' all yo' moonac [rackoon]; an' yo' whole crap of 'taters, an' wat'millons, an' mushmillons, let 'lone the callikers an' necklace, an' things you buy fur her—an' den she ain gwine have you a'ter all."

"How you know?"

"Caze, can't I see? An' didn't my wife hear Wash'ton ax master ef he might have a family?—an' master ax him who 'twas?—an' he say 'twas Jenny?"

"Well now, aint dat *too* bad! 'Tain no mo' an' last Sunday when I sole my har-skins, I give her a yaller hankcher!"

"Ah, boy! I tell you what—Jenny's a knowin' gal. She wa'n't bawn 'istiddy. So you moutsle let her 'lone."

Having become satisfied that no condition of life was too humble for the spirit of coquetry to flourish in, I here interrupted the conversation, by desiring to be shown the way to the nearest spring.

"Yes, master, I show you"—was the prompt reply of one of them, lifting his hat at the same time. "The quarters is roun' de pint of them woods, thah." And in three minutes the "quarters" presented themselves in the shape of some six or eight log buildings situated in a row, and about twenty or thirty feet from each other, all fronting the same way. In the rear of each was a little garden, enclosed by upright stakes interwoven with cedar boughs. Outside of each door a small shelf was fixed to the wall, supporting a pail of water, and a gourd used for a drinking-cup. The character of the ground was such, that we could neither see nor be seen until the moment of our arrival, at which time there were twenty or thirty little woolly heads amusing themselves, not silently. Some were running about—some swinging upon the gigantick grape-vines, with which the trees were covered—some rolling about on the sand—while others were earnestly engaged in doing nothing. In an instant, six curiously shaped curs rushed out from door and bush. Some wanted ears—some tails—the latter had been either cut off or driven in, so that there was hardly an inch to swear by—but none wanted voice: they all had it, and to spare; and spare it they did, very freely. This brought into play the deep voice of my guide, and the alto tones of the little negroes—"You Jowler!" "Come out dah, you Venter!" "Git out, you Bowman, you rascal, you!" Under cover of this volley the bipeds rushed to the attack, and by force of some good dry blows, the enemy was routed, *horse, foot, and dragoons*, the cries of the wounded mingling with shouts of the victors.

This unwonted clamour had brought to the doors all the inmates of the houses, and I became the cynosure of all eyes. My guide conducted me to the entrance of his own habitation, and politely invited me to walk in. Scarcely had we crossed the threshold, when a female voice from an inner room inquired, "Who dat?" My host, "on hospitable cares intent," answered not; when the voice was heard again in a higher and sharper tone—"You Polly, who dat come in dah?" The little girl, to whom this seemed to be addressed, made no reply, but gliding silently into the room from which the voice had come, the hitherto concealed speaker made her appearance.—"Sarvant, sir," said she, making a low courtesy, and evidently much confused; "I did thought 'twas one of the men."

"Polly"—said my guide, looking around for the little girl—but Polly was gone, to tell, doubtless, the news—"Whah Polly?"

"She done gone out."

"The gentleman want some water. Tell her to go git the piggin run to spring toreckly."

The woman went, and I heard her voice shrill and loud—"Oh! Polly!" and then, dwelling long upon the interjection "Oh! - - -! - - -! Polly! Na-an Oh! —! —! Polly!"

"Here me, mammy."

"Here, gal, make 'ast an' fetch a piggin o' water. Run every step o' the way. You hear? An' min' you don't fall down an' spill the water."

"My good woman," said I, as she re-entered the house, "my walk has made me somewhat hungry Can you give me any thing to eat?"

"I rekon, master, I ain got noth'n' you *kin* eat—

but ef you'll wait twell I run up to the gret 'ouse, I'll git somethin'."

"It is scarcely worth while to take that trouble," (said I, anxious to see how they were provided with food,) "what have you in the house?"

"The gentleman too hongry to wait, Nanny," said her husband; "you git the sifter an' siff some meal, whell I go to hen-'ouse an' git some *aags*."

"Dah's taters," said the woman.

"Sho' 'nough. You Polly," said he to the girl who just entered, dripping like a water-nymph, having in her haste spilt a good quantity of the water upon herself—"You Polly, jump down in the tater-hole, an' git out some taters."

The girl lifted two or three thick planks bored with many holes, which, with six or eight others like them, occupied the centre of the earthen floor, and in a moment disappeared in the dark cavity below, the existence of which, I had not until that moment suspected.

"Which sort you want, daddy?"

"Which sort you love bes', master, brimstone or moodus?" Being puzzled, I desired him to choose for me.

"Han' out de brimstone, gal."

Whilst my lunch was in preparation, I employed myself in surveying the room. The chimney occupied one entire end of the house; that is to say, was about fifteen feet in width. In the middle of this was the fire, leaving room on either side for seats. Opposite to each other were two small windows, or "light-holes," as the negroes sometimes call them, each having a shelf beneath it. The two corners most remote from the fireplace, were occupied, one by a little table with a small triangular deal cupboard nailed above it to the wall—the other by a hommony-mortar. Behind the door a very small shelf supported the good man's razors, &c.; and just above this depended from a nail, a very irregular polygon of looking-glass, fitted into a piece of pine bark by way of frame. Near the fire stood, on one side, a spinning-wheel, and on the other, a bedstead and bed. A short ladder in one corner terminated at a square hole in the ceiling, and formed a communication with the loft, which is used as a storeroom for broom-corn, shuck-mats, &c. It may be necessary to explain, that "shuck" is a name here given to the husk that envelops the ear of the Indian corn, and of which the negroes make mats, chair-bottoms, and even horse-collars, for sale. High on the wall hung some half dozen dry, inflated bladders, and many festoons of capsicum.

The family contained one individual not yet named; *videlicet*, the pig—who seemed to pass in and out just as his own humour dictated: liable, nevertheless, to an occasional cuff, whenever his nose was detected in unlawful places. It appears that each grown person of good reputation, is permitted to have constantly on hand one of these animals, which in due season is killed and sold, generally to the master, provided he will give a fair price, or salted and smoked in their own chimneys for their own use.

A little cross-legged table was put before me, upon which were spread fried eggs, sweet potatoes roasted in hot ashes, bread baked upon a hoe,* and a plate of honey. I found no difficulty in doing justice to this display of hospitality, and was just finishing my demonstration, when Henry, W——'s little son came in. "Aunt Nanny, mother says that if you have any eggs to sell, you may bring them up this evening, and she will buy them." [Whenever an elderly negro is addressed by a young person, white or black, the words *Uncle* and *Aunt* take the place of Mr. and Mrs.]

"Yes, honey, I got some. How many she want?"

"Two or three dozen."

"I ain got so many as dem. Is you been ax yo' mammy?" [A nurse is always called "mammy."]

"No. I am going to her house now."

His eye now fell upon me, and after apologizing for not observing me sooner, he despatched a negro boy to meet his father, whom he had seen coming over the hill, and let him know that I was at "Tom's house." W—— soon entered, and after some conversation with me, he turned to my host:—

"Tom, here are eleven and sixpence, the money Wilcox owed you for chickens. I deducted it from the price of the work he did for me. If I had not owed him, you would never have been able to get it from him. He wishes to buy your bacon. You will have sense enough, I hope, not to place yourself again in his power?—not to sell him your bacon on credit?"

"Thank'ee, master. I ain gwine le'm have it, no how."

At this moment, a huge double-fisted fellow came to the door, to say that—

"That ah brindle steer, b'longs to Mr. Reed, been broke into our fence dis mawnin' an' let in all Mr. Reed cows, an' owun too: an' de whole on 'um was at our cawn-pile, untwell George he seed 'um, an' he sot de dogs a'ter 'um, and druv 'um out. 'At's de most tarrifyin' cow I ever see. She walks in an' she walks out, whahsomever she pleases. She pull down fence same as people."

After giving some directions about his fences, W—— inquired of Nanny concerning her sister's health.

"She mighty weak to-day, sir, I thank you."

"What does she complain of?"

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* A kind of griddle.

"She think it's the rheumatis—not so, she's cotch a vi'lent cole; an' ole aunt Molly whah most in gin'ral stays with her when she's sick, was 'blice to lef her to-day, caze Big Tom wife as is been gruntin' nigh upon a week, was tooken very sudden this mawnin'.

"Tell Polly to send to the house for any thing that may be required."

"Yes, sir; but missis is been down a'ready, an' fotch every thing."

I find it impossible to give on paper a just idea of their manner of pronouncing many words. Indeed, the same word comes in many different shapes from the same mouth. Those in which *th* occur, are particularly liable to mutation. Take for example the word *there*. Besides the correct pronunciation, which they sometimes give it—we have "thah," and "dah," and "deyah." The variations of *that* are "dat" and "'at." They seem to have an especial dislike to the use of the letter *r*, and scarcely ever sound it but at the beginning of words.

Instead of names to distinguish them, they are better known as "Mr. Reed's Bob"—"Mr. Jones's Ned," &c. But if there be two of the same name upon the same plantation, each has a prænomen derived from his appearance or occupation. On W——'s property, for instance, there were no less than six Toms; viz., Little Tom, the overgrown author of the jeremiad about "Mr. Reed cow"—Big Tom, so called, because, being older than the other, he was, many years ago, larger—Lame Tom—Ploughman Tom—House Tom—and Betty's Tom.

Feeling disposed to witness a corn-shucking, I left the house, and guided by a negro boy was placed, at my request, in a situation from which I could see and hear all that was going forward, myself unseen.

About eighty or a hundred men were seated around a huge heap of corn, tearing off the husk, and throwing the denuded ears into spots where they were at once separate from the corn-pile, so called *par excellence*, and convenient to the operators. On the summit of the pile, sat a person, selected for his skill in improvisation, who gave out a line in a sort of rapid chant, at the end of which the whole party joined in a chorus. The poet seemed to have no fixed object in view, but to sing. He passed from one subject to another without regard to connexion. I have retained in memory the following lines, which may serve to give some idea of their style of composition They seldom use the sign of the possessive case:—

"Oh, Jenny gone to New-town,
Chorus. Oh, Jenny gone away!
She went becaase she would n't stay,
Oh, Jenny gone away!
She run'd away, an' I know why,
Oh, Jenny gone away!
For she went a'ter Jones's Bob.
Oh, Jenny! &c.
Mr. Norton, good ole man,
Oh! &c.
Treats his niggers mighty well.
Oh! &c.
Young Tim Barnet no great thing, Oh! &c.
Never say, come take a dram. Oh! &c.
Master gi's us plenty meat, Oh! &c.
Mighty apt to fo'git de drink. Oh! &c."

After running on in this way for ten or fifteen minutes, any one of the company who may be so disposed, strikes in at the top of his voice with a new tune. The hint is not lost on the leader, who immediately adopts as well as he can, his words to the air, if such it may be called, and moves on with perfect readiness in the same rambling style, contemning both rhyme and metre. By the by, it is curious to see how they get over any difficulty about adapting their unequal lines to the tune. The latter is a bed of Procrustes. If the verse be too short, some word is dwelt upon until the measure of time is filled—if there be more than enough, the redundant syllables, sometimes to the number of three or four, are run rapidly through upon one note.

An old negro regulated the movements of the bottle, but the vigilance of "Uncle Abraham" could not entirely prevent excess, as was manifested by an occasional burst of wild shrieks from some of the party.

The shucking continued until about eleven o'clock, at which time they all retired to a very plentiful supper; and I could not perceive next morning, that their exertions either in singing or drinking had done much damage. They were all arrayed in their best, clean and cheerful.

* * * * * * *

18th. Negroes are the most uncompromising aristocrats in creation. For a "gent'man" they entertain the profoundest respect. With a far different eye, however, do they regard those whom they term "po' white folks." For these they feel a perfect contempt, which extends itself the second and third generation. If, by good fortune or successful exertion, one of this class shall have placed himself in a more elevated position in society, and should by any means offend a negro, his remark is—"Tain no' mo' 'an any body could 'spec'. He larnt it when he was gravellin' taters for he daddy dinner."—"He ain no body, but ole Jack Smith's son whah use to keyah [carry] oshters about to sell—an' now he put's on all dese ars!"—"Ef my skin wa'n't black, I'd make a better gent'man 'an he is."—"Ef I wa'n't no better off 'an his daddy was, I'd agree to be drowned."

Their attachment to the families in which they have been born and bred, is often truly surprising. Any good or evil which happens to "Master," "Misses," "Mass Henry," or any of "de childun," excites or depresses them as though it were their own.

It often happens that the more careful among them, not only accumulate a number of little luxuries, but keep always on hand a small stock of ready money. W—— has a slave, who is a waiter in a tavern in the town of ———, about twenty miles distant. He is now here on a visit to his wife. In reply to some inquiries about his situation, he said—"I makes a rule, sir, always to be perlite, and the consequence is, that when any gent'man I waits on is gwine away, he says to me, say he, Andrew, I mus'n't forgit you, my good feller, says he; here's a half a dollar. So on wid another, I always has a plenty o' money, an' my wife don't have no trouble to raise no hogs, an' sitch like. I buys all her bacon, an' she drinks her tea, an' her coffee every day; an' she has I don't know how many dresses—calliker and silk, same as a lady."

I inquired if he was sometimes whipped. He drew himself up, obviously something wroth—"Nobody ever totch my back, sir, excep' my daddy an' mammy, when I was a little shaver about knee-high."

The articles they bring to market are chiefly quails taken in trap, chickens, ducks, eggs, fish, brooms, shuck-mats, and straw hats of their own manufacture, honey gathered from their own apiaries, and from the hive of the wild bee, and an endless variety of fruit, which this climate produces in the most lavish abundance. Many of them are mechanicks, and employ their leisure in making for sale articles proper to their several callings, such as tubs, shoes, baskets, &c.

I have lost no opportunity of observing the relation which exists here between master and slave, and am now satisfied that my previously formed notions were very erroneous. Profound respect on our part, is most generally met by kindly consideration on the other: and protection and dependance, here as elsewhere, beget confidence and affection.

FOREST WORSHIP.—W. G. Simms.

The teacher of a faith as simple as persuasive, was about to address them, in the secluded grove druidically conceived for its present purpose. The venerable oaks, a goodly and thick-clustering assemblage, forming a circle around, had left an opening in the centre, concealed from the eye, except when fairly penetrated by the spectator. Their branches meeting above afforded a roof, less regular and gaudy, indeed, but far more grand, majestick, and, we may add, becoming, for purposes like the present, than the dim and decorated cathedral, the workmanship of human hands Its application to this use, at this time, recalled forcibly to the mind of the youth, the forms and features of that primitive worship, when the trees bent with gentle murmurs above the heads of the rapt worshippers, and a visible Deity dwelt in the shadowed valleys, and whispered an auspicious acceptance of their devotions in every breeze. He could not help acknowledging, as, indeed, must all who have ever been under the influence of such a scene, that in this, more properly and perfectly than in any other temple, may the spirit of man recognise and hold familiar and free converse with the spirit of his Creator. There, indeed, without much effort of the imagination, might be beheld the present God; the trees, hills, and vales, the wild flower and the murmuring water, all the work of his hands, attesting his power, keeping their purpose, and obeying, without scruple, the order of those seasons, for the sphere and operation of which he originally designed them.

They are mute lessoners; and the example which, in the progress of their existence, year after year, they regularly exhibit, might well persuade the more responsible representative of the same power, the propriety of a like obedience. The devotions commenced with a hymn, two lines of which, at a time, having been read and repeated by the preacher, furnished a guide to the congregation; the female portion generally uniting to sing, in a style doubly effective from the utter absence of all ornament in the musick. The strains were just such as the old shepherds, out among the hills, tending their charges, might have been heard to pour forth, almost unconsciously, to that God who sometimes condescended to walk along with them. After this was over, the preacher rose, and read, with a voice as clear as unaffected, the twenty-third Psalm of David, the images of which are borrowed chiefly from the life in the wilderness, and were therefore not unsuited to the ears of those to whom they were now addressed.

Without proposing any one portion of this performance as a text or subject for commentary, he delivered a discourse, simply filling out, for the benefit of those about him, those beautiful portraits of a good shepherd and a guardian God, which the Psalm had furnished ready to his hands. He spoke of the dependance of the creature, instanced, as it is daily, by a thousand wants and exigencies, for which, unless by the care and under the countenance of Providence, he could never of himself provide. He narrated the dangers of the forest, imaging by this figure the mazes and mysteries of life; the difficulty, nay, the almost utter impossibility, unless by his sanction, of procuring sustenance and of counteracting those innumerable incidents by fell and flood, which, in a single moment, defeat the cares of the hunter and the husbandman, setting at naught his industry, destroying his fields and cattle, blighting his crops, and tearing up with the wing of the hurricane even the cottage which gives shelter to his little ones. He dwelt largely and long upon those numberless and sudden events in the progress of life and human circumstances, over which, as they can neither be foreseen nor combated by man, he has no control, and appealed for him to the Great Shepherd, who alone could do both. Having shown the necessity of such an appeal and reference, he next proceeded to describe the gracious willingness which had at all times been manifested by the Creator, to extend the required protection. He adverted to the fortunes of all the patriarchs in support of his position; and singling out innumerable instances of this description, confidently assured them, from these examples, that the same Shepherd was not unwilling to provide for them in like manner. Under his protection, he assured them, "they should not want." He dilated at length, and with a graceful dexterity, upon the truths, the simple and mere truths of God's providence, and the history of his people, imbodied by David in the beautiful strain which he had read them. It was poetry, indeed, sweet poetry; but it was the poetry of truth and not of fiction. Did not history sustain its every particular? Had not the Shepherd made them to lie down in green pastures; had he not led them beside the still waters; restored he not their souls; did he not lead them, for his name's sake, in the paths of righteousness, and though at length they walked through the valley where death had cast his never-departing shadow, was he not with them still, keeping them even from the fear of evil? He furnished them with the rod and staff; he prepared the repast for them, even in the presence of their enemies; he anointed their heads with oil, and blessed them with quiet and abundance, until the cup of their prosperity was running over; until they even ceased to doubt that goodness and mercy should follow them all the days of their life; and, with a proper consciousness of the source whence this great good had arisen, they determined, with the spirit not less of wise than of worthy men, to follow his guidance, and thus dwell in the house of the Lord for ever.

Such did the old man describe the fortunes of the old patriarchs to have been; and such, having first entered into like obligations, and pursuing them with the same fond fixedness of purpose, did he promise should be the fortunes of all who then listened to his voice. As he proceeded to his peroration, he grew warmed with the broad and boundless subject before him, and his declamation became alike bold and beautiful. All eyes were fixed upon him, and not a whisper from the still murmuring woods which girded them in, was perceptible to the senses of that pleased and listening assembly. The services of the morning were closed by a paraphrase, in part, of the psalm from which his discourse had been drawn; and as this performance, in its present shape, is not to be found, we believe, in any of the books devoted to such purposes, it is but fair to conclude that the old man, not unwilling, in his profession, to employ every engine for the removal of all stubbornness from the hearts of those he addressed, sometimes invoked poetry to smile upon his devotions, and wing his aspirations for the desired flight.

SHEPHERD'S HYMN.

Oh, when I rove the desert waste, and 'neath the hot sun pant,
The Lord shall be my shepherd then, he will not let me want;
He'll lead me where the pastures are of soft and shady green,
And where the gentle waters rove, the quiet hills between.

And when the savage shall pursue, and in his grasp I sink,
He will prepare the feast for me, and bring the cooling drink,
And save me harmless from his hands, and strengthen me in toil,
And bless my home and cottage lands, and crown my head with oil.

With such a Shepherd to protect, to guide and guard me still,
And bless my heart with every good, and keep from every ill;
Surely I shall not turn aside, and scorn his kindly care,
But keep the path he points me out, and dwell for ever there.

EXTRACT FROM A LECTURE,

Delivered before the Mechanicks' Institute, New York, 1833.

BY G. C. VERPLANCK, ESQ.

The incidental mention of the ultimate advantages derived by the art of navigation from the labours of Dollond, suggests to my mind another illustration, and recalls the name of JOHN SMEATON. He was by regular trade a philosophical instrument maker; but his active mind had taken a broad range of rational curiosity and employment, embracing almost every thing in science or art that could throw light on mechanical contrivance. His inventions of this sort were very numerous and ingenious, but his solid fame rests chiefly upon the erection of the Eddystone Lighthouse. Its site was one of the utmost consequence to the naval and commercial marine of Great Britain, and, indeed, of the world. As it was to be placed on a reef of rocks, far from the main land, and exposed to the whole force of the waves of the Atlantick, the building of a durable edifice there had baffled the skill of the ablest architects.

At that period, about the middle of the last century, that branch of marine construction which relates to piers, moles, artificial harbours, breakwaters, &c., was far from that scientifick development it has since received, and which it in no small degree owes to Smeaton himself. The commissioners for rebuilding the lighthouse, aware of the difficulties they had to encounter, reported that this was not an undertaking for a mere architect, however skilful, but required the talent of some one eminent for general mechanical skill and contrivance.

Smeaton was selected. His plan was wholly original, having been suggested immediately by the consideration of the means used by Nature to give durability to her works, and taking the model of strength and resistance to the elements which she had given in the trunk of the oak.* The execution corresponded with the boldness and perfection of the first conception.

There are few narratives of more intense interest or varied instruction than his own account of this great work, which is among my earliest and most vivid recollections of this sort of reading. I will not attempt to mar it by a meager abstract. It is enough to say that this noble effort of mechanical genius, thus grafted upon and made part of the rocky bottom of the sea, and resisting the immense might of the ocean, which it faces, has never been surpassed or improved upon, but has been the model or guide of numerous subsequent works of marine construction of great excellence and unbounded utility.

The ancient Pharaohs of Egypt, in the pride of conquest, or the vain hope of immortality, exhausted the labours of millions of slaves to rear immense pyramids and tall and huge granite obelisks. The imperial Trajan, the most illustrious name of Rome, after the loss of her liberties, decorated his forum with that magnificent column which still bears his own name, and upon which the sculptor lavished his art, to commemorate the victories of its founder over the Dacian barbarians, as they were called; that is to say, over a race of free and brave men, who had struggled for their liberties against the grasping tyranny of Rome, with a courage and talent worthy of a better fate.

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* "The building," says one of Smeaton's biographers, "is modelled on the trunk of an oak, which spreads out in a sweeping curve near the roots, so as to give breadth and strength to its base, diminishes as it rises, and then again swells out as it approaches to the bushy head, to give room for the strong insertion of the principal boughs. These boughs are represented by a broad curved solid stone cornice, the effect of which is to throw off the heavy seas, which, when thus suddenly checked, fly up, as is said by eye-witnesses, fifty or a hundred feet above the top of the building, and are thus prevented striking and injuring the lantern containing the lights, though for the moment enclosing it all around."

Napoleon, whose sublime genius and grand aspirations were yet unhappily alloyed by so great an admixture of the meaner ambition of ordinary kings and conquerors, reared, in his own capital, the lofty brazen column of his victories, cast from artillery won on the bloody fields of Marengo, and Jenna, and Austerlitz. Upon that vast bronze, the veteran companions of his glories can behold, in bold relief, the storied images of their campaigns, their toils, and their exploits, and those of their chief and their hero.

But in the eye of sober reason, how poor and how vain are these monuments of pride, of power, of glory, and even of genius, when compared to the solitary, seagirt, unadorned Atlantick tower, which perpetuates the name, the talent, and the unambitious labours of John Smeaton! The glories of the conquerors have vanished like the morning mist. Their conquests and their empires have crumbled into dust; but the Eddystone tower stands firm amidst the tempest and the uproar of the ocean; and there, and wherever else its form is imitated and its principles applied, as on our own coasts and on the shores of our western lakes, it throws its broad light across the storm and the gloom, giving safety to the mariner, and guiding that commerce which, making the natural riches of every climate the common property of all, is surely destined to bind together the whole family of man in the mutual and willing interchange of art, and learning, and science, and morals, and freedom.

AMERICAN RAIL.

In Virginia, called, the "Sora" or "Soarer," and in South Carolina, the Coot, "is a bird," says Wilson, "whose history is involved in profound mystery. No one can detect the first moment of arrival; yet all at once, the reedy shores, and grassy marshes of our large rivers swarm with them, thousands of them being sometimes found within the space of a few acres. These, when they do venture on wing, seem to fly so feebly, and in such short, fluttering flights among the reeds, as to render it highly improbable to most people that they could possibly make their way over an extensive country. *Yet, on the first smart frost that occurs, the whole suddenly disappear, as if they had never been.*"

With regard to the disappearance of this bird, which has been a subject of so much speculation among Ornithologists, and so much inquiry among all the lovers of the science of Natural History, we are happy to be able to throw some light, through the kind attention of a correspondent in Virginia:—

To the Editor of the Family Magazine:—

SIR—It is well known that the "Soarer," "Sora," or "Rail"—for by all three names is it known—disappears on the night of the first hard frost, although the marshes may be alive with them up to that time; and is not seen again until the succeeding autumn. "What becomes of it?" is a question which has been repeated until people are tired of asking it. That they are not migrating is clear, I think, not only from the fact, that they are at that season too fat to fly more than fifteen or twenty yards, but, because they are never seen passing through the country. It has been suggested, that they move in the night only: but they would hardly move without having in view some ultimate place of rest; and there they would probably be found, even though they might not be seen on the passage.

I had often heard that they had been found buried in the mud, but never until now, did the information come in an authentick form: A gentleman of this state, upon whose veracity every reliance may be placed, informed me a short time since, that he had seen them turned up by the spade in draining a marsh:- and the enclosed letter from St. Leger L. Carter, Esq., of Cleve, King George county, Va., will show that they breed here.

I am no Ornithologist, and cannot therefore judge whether this information be valuable or not. But if upon examination, you think it worth any thing, and it should be one of those subjects which come within the intention of your Magazine, you are at liberty to give it to your readers in what shape you please.

"I send you by the steam-boat Rappahannock, a Sora's nest. You know it has been long a desideratum in Ornithology, to ascertain what becomes of the Sora, when it suddenly disappears at this season of the year; and whence it comes when it as suddenly appears in our marshes about the 25th of August or 1st of September. That it does not go away like other birds of passage, is rendered probable by the fact of its being so fat, that it can fly but a short distance: and that it certainly breeds in our marshes, is proved by the discovery of this nest. On the 8th of the present month, my nephew Mr. Landon Carter, and Mr. Henry Allison, of Madison county, were on a shooting excursion, and the former gentleman found the nest attached to the wild oat, about three feet from the ground, with two young ones and an egg in it. On examining the young, no doubt was entertained of their being the Sora. They resembled in every respect the parent bird; and the egg is wholly unlike that of any bird I have ever seen, being smaller than a sparrow egg, and of a chocolate colour. The nest was attached to the oat after the manner of the humming-bird's, and the entrance, which was at the side, was defended from the weather by a slight projection. The height at which it was suspended, secured and designed to be above the highest tide. It is made of the wild oat-grass, and the fabrick is strong.

" A further proof that this bird breeds in our marshes, is found in our having killed it in all the various stages of its existence, from the unfledged nestling to the King Sora, as he is called, which appears to be the male bird, and is more than twice the size of the female.

" Knowing your fondness for curious inquiry, I send you the nest and its egg; and regret that the young ones were killed, and thrown away.

" Very affectionately, yours,
" ST. LEGER L. CARTER.
"29th September, 1835."

NATURAL HISTORY OF CAOUTCHOUCK.*

Sometime within the last twelve years, an individual brought from Para, a port in Brazil, into Boston or Salem, a small number of Indian rubber shoes. It proved for the sailor, a profitable adventure, and induced him in a second voyage to import a larger number. The success of these small beginnings, induced others to enter the business, which has been constantly increasing, until, in 1832, it is computed that there were 500,000 pairs of Indian rubber shoes imported into the United States. Thus, has a substance, once extremely expensive, and restricted to the sole use of erasing pencil marks, become an almost indispensable article of wearing apparel; and accessible to all classes, on account of its cheapness and abundance.

The caoutchouck, or gum elastick, which is brought to this country, is the product of two trees, the "*heavea caoutchouch*," and the "*jatropa elastica*," which grow spontaneously in several provinces of Brazil. Para is the chief depot of the article, and I believe the sole place of export. It is also obtained from several trees in the East Indies; but it is scarcely ever brought thence to this country, and certainly never in large quantities.

The local name, in Para, of the tree which affords the caoutchouck, is "*pao de seringa*." It attains the height of an ordinary New England white oak, and is represented as decidedly handsome. The juice as it flows from the tree, is called "*laite de seringa*." The gum is procured and manufactured by native Indians, in the following manner:—Every morning, generally before sunrise, the trees are tapped, by making an incision through the bark, and a short distance in the wood, with a hatchet. A cup of moist clay is then plastered upon the tree, just below the wound: so that the *laite* as it issues from the tree, is effectually arrested. In this manner, about seventy trees are put under contribution by one individual. Generally, in four hours after the sun is risen, the juice stops flowing, and it is hastily collected, by skilfully detaching the lip from the tree, and pouring its contents into a calabash.

From the above number of seventy trees about four quarts of juice are collected, which are sufficient for the manufacture of three pairs of men's shoes of ordinary size and thickness. The making of shoes and all other articles, is commenced immediately on the juice being collected. Shoes are moulded upon lasts sent out from this country for that purpose. The lasts are provided with a handle at the top and near the heel, and are smeared over with a thin coat of clay. Other articles are formed upon patterns of clay, which are fashioned by the rude artist, sometimes with considerable taste; but oftener in the most grotesque figures. The juice is dipped up in small quantities, and poured over the forms, which are then held over a dense smoke a few seconds. Another coat of juice is applied and smoked; and so on successively, until a sufficient thickness is obtained. Twenty-five or thirty coats are necessary for a shoe of common thickness. The articles, in this state, are placed in a dry situation for twenty-four hours, when they will have acquired sufficient consistency to receive the figured impressions with which they are usually ornamented. These impressions are made by engraved blocks, prepared in this country. During the twenty-four hours that the articles are drying, they are covered with a copious moisture. This spontaneous separation of the more liquid portions of the juice, and the coagulation of another and by far the greatest portion, takes place even when the juice is received into bottles and carefully protected from access of air. From this cause, all attempts to transport it to different parts in an unaltered condition have failed. I have several bottles which were prepared with the utmost care, and the contents of some of which were combined with various solvents; but in every one the juice has separated into the liquid and coagulable portions.

The natives are extremely fond of sipping the fresh *laite;* and I am informed by the gentleman from whom many of the above particulars were obtained, and whose veracity is unquestionable, that it is a palatable beverage, resembling in taste, as much as it does in appearance, cow's fresh milk.

The smoke which is indispensable in the making of Indian rubber articles, is procured from the combustion of a species of nut; and the natives insist that the smoke from no other article will answer the purpose.

The caoutchouck trees are tapped every other day, and are said to yield a better juice, and in greater quantities, after having it drawn from them a number of years. The trees yield most abundantly during the wet season; but the juice is of an inferiour quality.

Since the gum elastick has become abundant and cheap, it has been applied to a variety of new uses; for which its peculiar chymical and mechanical properties admirably adapt it. It is well known that cloth is now covered with a thin coat of it, from which garments are made absolutely water-proof; and during the few storms that we have had, the past summer, groups of individuals might be seen clad in their elastick mail; apparently about as much annoyed by the rain, as a flock of ducks. More recently, the caoutchouck has been so skilfully applied within the meshes of the cloth or between the pieces, that there is no appearance of it externally. I have seen what appeared to be a tube of ordinary cotton cloth, which, when filled with water, even subjected to the hydrostatick pressure of a column four feet high, proved absolutely impervious to the liquid.

Scientifick Tracts.

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* Indian rubber.

HISTORY.

(Continued from p. 207.)

The commencement of the *tenth period* is dated at the Hegira, or Flight of Mahomet from Mecca, A. D. 622. This impostor, favoured by the peculiarly degraded state of the civilized world, made extensive conquests, and spread his doctrines by the power of the sword.

The empire of the Saracens extended almost as widely as that of the Romans had done; but its duration was transitory, and it fell to pieces soon after the death of its founder.

The dissensions that took place among the successors of Mahomet so weakened their power, that the Turks, a tribe of the Huns, took advantage of their imbecility to establish their authority; and to facilitate this, they embraced the religion of the vanquished.

In this period the popes began to assume temporal power; they had before asserted their supremacy in the Church, but they now insisted upon being considered as sovereign princes.

The tenth period likewise witnessed the conquests of Charlemagne; but at his death his vast empire being divided among his sons, bloody wars arose, and Europe, couvulsed from one extremity to the other, seemed like one vast field of battle.

In Britain, the Danes, Saxon, and Normans, successively made conquests. In Germany and Italy, the conquests between the emperours and the popes desolated some of the finest countries in the world. The mind can scarcely form any idea of times more calamitous.

The *eleventh period* commences with those wars called the "Crusades," undertaken at the instigation of the popes, to recover Judea, or the Holy Land, from the dominion of the Saracens. Vast multitudes poured down from every part of Europe to the conquest of Palestine, of which but few ever returned to their native land.

In the East, the conquests of Jenghiz Khan were rapid and extensive; and after him Tamerlane carried his victorious arms over many countries. But the vast dominions of both these conquerors were divided into petty states after their death.

It would swell the limits of this article were we barely to mention the important events that have occurred in this period; suffice it to observe, that the Eastern Roman, or Greek empire, was dissolved by the taking of Constantinople by the Turks.

America was discovered. The Moors were expelled from Spain. A revolution took place in England, in which its monarch, Charles I. was put to death; and another in France, more recently, in which Louis XVI. experienced the same fate.

This period is remarkable for astonishing discoveries in the arts and sciences. Gunpowder, printing, the telescope, clock and watch-making, aerostation, the art of procuring light from gas, the power and uses of steam; and a thousand other useful and truly valuable inventions distinguish this period, as some of the most beneficial to mankind of any on record.

The general history of the world may also be divided into two great parts, called ancient and modern; the Advent of our Saviour separating them. The ancient precedes our Lord, and contains 4004 years, or forty centuries, according to the Hebrew system; many calculations, however, differ from the Hebrew —such as the Samaritan, which is computed to be 4305 years, or forty-three centuries; and the Septuagint, 4270 years, or forty-two centuries; yet the Hebrew, being the Scripture account, is that which is most generally followed.

Ancient history may be subdivided into sacred and profane. The sacred, which treats of the works of God, and of his favourite people, includes forty centuries; from the Creation to Christ, and receives its authority from the Bible. It is divided into two parts, the Old Testament, closing 430 years before the birth of our Saviour; and the New Testament, closing with the Revelation of St. John the Divine.

Profane history is shorter than the sacred, by seventeen centuries, because it began that number of years after the creation; and we have an account of it only from tradition. It includes twenty-three centuries, which may be divided into three parts or periods; namely, the uncertain, containing five centuries; the fabulous, ten; and the historical, a happy period, in which that science began to be written and established upon more certain authority, including five centuries.

In order to facilitate the knowledge of history, the world is divided into different ages as given in the beginning of this chapter.

OBSERVATIONS ON HISTORY, ADDRESSED TO YOUNG STUDENTS.

History is among the most agreeable and instructive exercises to which young students can apply themselves; for it at once gives them an acquaintance with characters and events, and a familiartiy with all the world. It not only gratifies that love of the heroick and the grand, which is inherent in our nature, but also, by setting before us what has happened in the world, prepares us to comprehend and bear whatever may happen to ourselves. There cannot, consequently, be a more important branch of knowledge, than that which forms the judgment as to the sort of reading upon which the hours of relaxation may be occupied.

It too often happens that the desire, whether natural or acquired, which most young persons have for reading, is so far from being converted into the extremely beneficial instrument of good, which it might be, that, in fact, it becomes a cloak for vacuity of mind, and a source of insignificance and ignorance, which, once rooted, nothing can uproot. History, abounding with stupendous achievements and astonishing vicissitudes, and every way calculated to direct as well as to instruct the student, is too frequently read as a forced task; and the leisure hours which history ought delightfully, as well as profitably, to occupy, are worse than wasted upon the frivolous or fanciful rubbish of a circulating library. No works of fiction can be at all comparable to authentick history and the generality of those which fill the shelves of the circulating library are calculated, by their unnatural incidents and characters, and their wild and utterly impossible events, to fill the minds of their readers with ridiculous notions, to disgust them with real life, and to pave the way to innumerable and terrible errours. Our young friends may safely rely upon our correctness in assuring them, that, if they will read history as an amusement, and not as an imposed task, they will, in tracing the causes and results of events, and the characters connected with them, not merely stock their minds with the most valuable species of human knowledge, but derive from the perusal of every volume of history more exquisite pleasure, than from reading a cart-load of ill-told and ridiculous fictions.

BOTANY.

(Continued from p. 212.)

Those leaves of water-plants which grow entirely under water, are generally cut into long *linear* segments: while those which float on the surface are formed like other leaves; *Ex.:* water ranunculus, featherfoil, and most others.

There are some plants with leaves very curiously formed, which cannot be referred to any of the foregoing. Of these, the most singular are the Nepenthes, an East Indian plant; the Sarracenia,[*] &c. The stalk is hollowed out at the end into a small cup, and the *lamina* of the leaf forms a cover to it. This pitcher is generally filled with a pure water distilled into it from the plant, and insects are often found drowned in the fluid.

Generally the two halves of the leaf, one on each side of the midrib, are alike, or the leaf is *symmetrical;* but this is not the case in many, as may be seen in those of the nightshade, &c., and more obviously in the Begonia, the leaves of which are irregular or oblique.

On many plants the leaves differ in form in different parts of it; thus, the *root-leaves,* or those springing from the stem just above the root, are lyrate in the Belleisle cress, while the *stem-leaves* are obovate: on the common horseradish, the radical or root leaves are oblong and crenate, the stem-leaves, lanceolate and entire.

In the common bellflower, the radical leaves are round, the stem-leaves linear. The former generally die off early, and are not often seen; hence, beginners are surprised at the *specifick* name given to it (Campanula *rotundifolia*), which means round-leaved.

On the common ivy, leaves of two forms are commonly found.

On the black oak (*Quercus nigra*), a North American tree, there are leaves of three forms, one obovate and entire, another obovate and sinuated, and the third lyrate.

A South American plant, called on that account L[illegible]ia *heterophylla*, or *irregular-leaved*, has six different forms of leaves; and many other examples might be given.

Many plants have no leaves at all, their office being performed by some other part peculiarly formed for that purpose. It requires accurate knowledge of the subject, to be able to understand whether such plants have leaves or not.

The stem of the cactus, or prickly pear, swells out between the *nodi*, into ovate, fleshy, prickly masses, which look like leaves; and hence, these plants are erroneously supposed to bear their flowers on the edges of their leaves, though, in fact, they are leafless. The common dodder (Cuscuta europæa), has been already mentioned as a leafless plant.

In the Lathyrus nissolia, an English plant, the stalk is flattened out, and looks like the leaf of a grass, but there is no real *lamina.*

In another rare plant of the same tribe (Lathyrus aphaca), the place of the leaves is supplied by large *stipulæ,* an appendage to the leaf which will be presently described.

In some plants the leaves are only partially produced, and look like scales on the stem, as on the common broomrape, the bird's-nest orchis, and many others.

At the foot of the stalk of the leaves of many plants, are found small leafy appendages called *stipulæ;* which will be best understood by examples and observation.

In the common dog-rose, the stipulæ grow for their whole length, along the sides of the stalk, one on each side of it. In the common rhubarb, the stipulæ form a sheath round the stem.

Those of the sweet and everlasting pea, and other plants of that tribe, are shaped like half the head of an arrow.

Those of the common meadowsweet are roundish, of the clover, oval, of the sweet violet, *lanceolate,* and of the apple and pear, *linear.*

They are commonly *herbaceous* in texture, but in the polygonum, and many other plants, they are *membraneous.*

From the mode of their growth in some plants, as in the coffee-tree, where they are produced between opposite leaves on the stem, they are considered as accessory leaves; but little is known about them.

They are regarded as part of the leaf in botanical descriptions. Plants which possess them, are said to have *stipulate* leaves, those which have them not, are described as having *exstipulate* leaves.

The leaves of most plants possess a power of motion, which is the effect of what is termed *irritability,* or vitality; and is, consequently, independent of any mechanical force applied to them.

The most general exhibition of this motion is shown in the change of position of leaves during the night, and has been termed by Linnæus, the "sleep of plants;" it is easily observed in compound leaves.

The leaflets of those of the acacia, and other plants, droop on the approach of darkness, and rise up with the returning light; in the bladder-senna the reverse takes place. But a more striking instance of voluntary motion is shown by the leaves of a Bengal plant, called *Hedysarum gyrans;* the two lateral leaflets are in almost perpetual action, turning abruptly and irregularly round on their stalks; sometimes only one moves, while the other remains at rest; the terminal leaflet moves up and down.

The irritability of the double compound leaves of the *Mimosa pudica,* or sensitive plant, is still more apparent. On the lightest touch, the leaflets close themselves up in pairs; if the blows be repeated, the secondary stalks fold upon the principal one, the whole leaf drops as if dying, and only resumes its natural position after some time has elapsed.

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[*] There is a figure of this plant on the righthand corner of the engraving on p. 180.

Here, though the immediate cause of the motion is mechanical, yet the mode in which the effect shows itself, results from the vitality of the plant.

Travellers describe the effect of walking through underwood composed of this plant as very singular, the plants seem to wither at their approach, and to shrink from their presence; for an injury so great as being trod on causes the whole leaf, which in their native woods is very large, to droop at once.

The Dionæa, a North American plant, has leaves which can close together, by turning on the midrib as a hinge, and are covered with stiff, prickly hairs. No sooner does an insect alight on these, than the two halves fold together, and kill it. This plant is hence called Venus's flytrap.*

The leaves of the sundew, so common on moist heaths in England, possess the same property in a less degree, but small flies may be often seen dead in them.

The leaves of many plants are also affected by the application of noxious vapours, or by mineral and other poisons, which is a further proof of irritability.

But though there are few plants which manifest irritability in so great a degree as those abovementioned, yet all have the power of turning their leaves, to seek the light which is necessary to their growth, if placed in too shady a situation.

The leaves of those placed in a dark room, or in a cellar, will not only turn their upper sides towards the window, but their stalks will grow longer than they ordinarily do, in order to approach as near as possible to it. This has been observed by every one, of common geraniums, in such situations.

The leaves of all trees and shrubs, after a certain time, fall off and are again renewed. In cold climates this "fall of the leaf" generally takes place on the approach of winter, and as, during the rigour of that season, the plant is in a torpid state, the new leaves do not appear till the return of warmth with the spring.

Those plants, the leaves of which do not die off all together, but are being successively renewed, so that they are never leafless, are called evergreens; *Ex.:* juniper, laurel, fir, &c.

Many plants are evergreens in warmer climates, that shed their leaves with us in winter; as the orange, the oleander, and others. It is found that here, those alone are evergreens which have particular fluids formed in their bark or *skin*, which defend them from the effects of cold; as firs, pines, larches, &c.

It is, therefore, most probable that severity of weather is the cause of the general shedding of their foliage among our forest trees and shrubs; but all trees, in every climate, lose their leaves and renew them.

When the first grow, leaves are continuous, or in one piece with the stem; but an *articulation* is generally formed at their junction, and when this is completed, the leaf decays and falls.

MAXIMS.

Every man is the architect of his own fortune.
Fear of God is the beginning of wisdom.
Friendship once injured is forever lost.

ASTRONOMY.

THE ZODIACK.

The Zodiack* is an imaginary zone or belt in the heavens, in which all the planets revolve in their orbits. Its breadth is reckoned differently by different astronomers. It is generally made to extend from 8 to 10 degrees on each side of the *ecliptick*, the circle which the earth describes annually as seen from the *sun*, and which the sun appears to describe as seen from the *earth*.

The Zodiack is divided into 12 equal parts, called *signs*, and each sign contains 30 degrees, corresponding to the 12 months of the year.

The signs of the Zodiack are the following:—

1. Aries - - - ♈ *the Ram.*
2. Taurus - - - ♉ *the Bull.*
3. Gemini - - - ♊ *the Twins.*
4. Cancer - - - ♋ *the Crab.*
5. Leo - - - ♌ *the Lion.*
6. Virgo - - - ♍ *the Virgin.*
7. Libra - - - ♎ *the Balance.*
8. Scorpio - - ♏ *the Scorpion.*
9. Sagittarius - ♐ *the Archer.*
10. Capricornus - ♑ *the Goat.*
11. Aquarius - - ♒ *the Water-bearer.*
12. Pisces - - - ♓ *the Fishes.*

Besides these constellations in the Zodiack, the stars in every other part of the heavens are reduced into constellations of some figure to which it is supposed each set of stars bears some resemblance. In the northern regions are 35 constellations, and in the southern 47; making in the whole, 94 constellations.†

Besides the stars mentioned in the several constellations, there are a great number not included in any constellation, and therefore are called unformed stars.

The total number of stars in the Zodiack is 1,016, in the whole of the constellations, 3,478.

The characters of the signs seem to be imperfect hieroglyphical outlines of the creatures whose name they bear. Thus:—

♈ is a sketch of the horns of the ram;
♉ is the forepart of a bull's head;
♊ is a union of the heads of two kids,
♋ denotes the two foreclaws of a crab;
♌ represents the head and tail of a lion, with his back rising into a kind of arch, as it is said to do when he is preparing to spring upon his prey;

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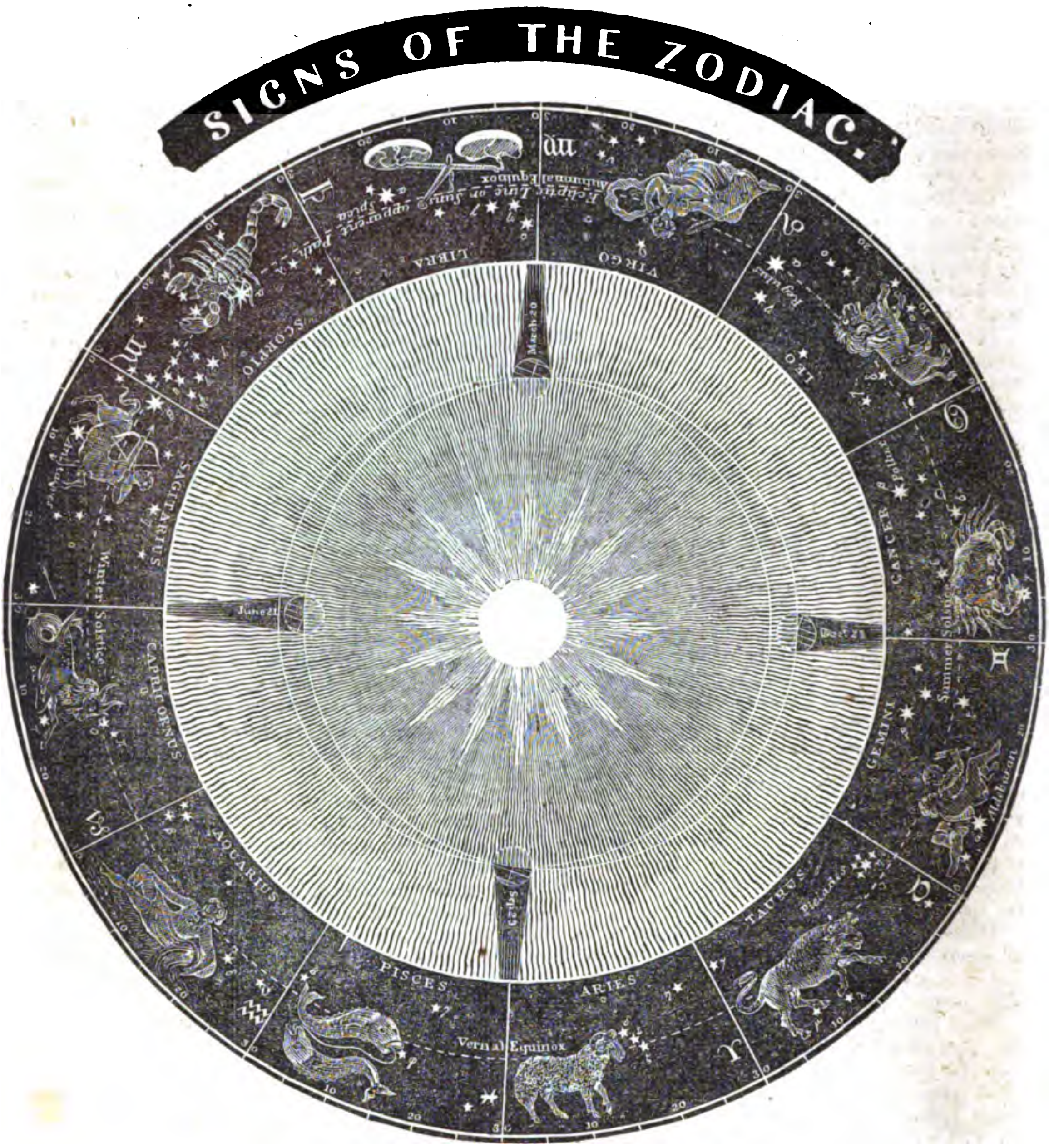
* There is a figure of this plant in the righthand corner of the engraving on p. 180.

* The term Zodiack is derived from the Greek word *Zodian*, an animal, because most of the constellations in it are the figures of animals.

† The ancients divided the Zodiack into the above 12 constellations in the following manner. They took a vessel with a small hole in the bottom, and having filled it with water, suffered the same to distil drop by drop, into another vessel set beneath to receive it; beginning at the moment when some star rose, and continuing until it rose the following night. The water fallen down into the receiver they divided into 12 equal parts; and having two other small vessels in readiness, each of them fit to contain one part, they again poured all the water into the upper vessel, and observing the rising of some star in the Zodiack, they, at the same time, suffered the water to drop into one of the small vessels; and as soon as it was full they shifted it, and set an empty one in its place; when each vessel was full, they took notice what star of the Zodiack rose, and though this could not be done in one night, yet in many they observed the rising of 12 stars or points, by which they divided the Zodiack into 12 parts.—FERGUSON.



♍ is the body of a virgin, with an ear of corn in her left hand;
♎ this is nothing more than the beam of a balance;
♏ is a slight sketch of the paws, long tail, and sting of a scorpion;
♐ represents the arms of an archer or hunter;
♑ denotes the horns, back, and tail of a goat;
♒ expresses a current of water,
♓ is the picture of two fishes tied back to back.

These several divisions of the Zodiack are called signs, because they serve as marks to distinguish the sun's place in the ecliptick; and their number was limited to twelve, because, during the sun's passage through the ecliptick, there are twelve lunations, which, it is probable, were the earliest methods in use for measuring time, except the alternate succession of day and night. But, as twelve lunations are a few days shorter than the solar year, and as mankind were inclinable, from habit, to have the year, after its length was more accurately ascertained, still divided as before into twelve months, they were obliged to observe the sun's annual path through the heavens, and divide it as nearly as possible into twelve equal parts, by noticing the most remarkable stars which were either in or near these parts. Hence came the twelve signs, the several names of which are explained above.

Of these signs, the *first six* are called *northern*, from their lying on the north side of the equator; the *last six* are called *southern*, from their being situated on the south side of the equator. The signs

Capricornus to Gemini are called *ascending*, the sun approaching, or rising to the north pole, while it passes through them; and the signs from Cancer to Sagittarius are called *descending*, the sun, as it moves through them, receding or descending from the north pole.

As the *Ecliptick* and *Zodiack* are by many considered one and the same thing, it is proper to distinguish the one from the other. The Ecliptick is that circle in the heavens through which the earth makes its revolution round the sun, being the earth's orbit or path; hence this (imaginary) line properly belongs to the heavens.

The *Geographical* Ecliptick is an imaginary great circle drawn on the terrestrial globe, answering to, and falling upon, the celestial ecliptick, in the middle of the Zodiack; and whether we call it the *terrestrial* or *celestial* ecliptick, or the *path* of the earth or sun, it at all times signifies the *path* or *way* of the earth *round* the sun, in the space of twelve months, or a year. The ecliptick on the terrestrial globe, or map, is that graduated circle which crosses the equator obliquely, forming with it an angle of 23° 28′. The points where this circle crosses the equator are called the equinoctial points—the one is at the beginning of Aries, the other at the beginning of Libra: and when the sun is at either of these points, the days and nights are equal throughout the world.

The commencement of Cancer and Capricorn are called the *solstitial points;* they are so called, because, at those times, the sun does not appear to alter his distance from the equator for several days. The time when the sun enters the northern *solstitial point* is called the *summer solstice*, because it is then the middle of our summer; and the time when he enters the southern is called the *winter solstice*, because it is then the middle of our winter. But in the southern hemisphere the solstices will be inverted, because it is our winter when it is their summer, and our summer when it is their winter.

The direct distance of the sun from the equinoctial, in his course through the ecliptick, is called his *declination;* which is said to be either *north* or *south declination*, according as he is on the north or south side of the equinoctial. The same term is also applied to any of the stars, or planets, and with the same meaning.

The signs of the Zodiack are counted from west to east, beginning with *Aries*, which is in the vernal equinoctial point; so that *Cancer* will be in the summer solstitial point, *Libra* in the point of the *autumnal equinox*, and *Capricorn* in that of the winter solstice.

The names and characters of the twelve signs are supposed to have been first introduced by the ancient Egyptians, who were remarkable for their skill in astronomy, and for the use of hieroglyphical, or symbolical characters. The months of *March*, *April*, and *May*, being the spring quarter of the year, when *lambs*, *calves*, and *kids* (which are usually twins) are brought forth; their corresponding signs were therefore called ARIES, TAURUS, and GEMINI, that is, the *Ram*, the *Bull*, and the *Twins*. CANCER, the Crab, as moving sideways, or obliquely, represents the oblique motion of the sun in June, when he recedes from the summer solstice. VIRGO, the gleaning Virgin, with an ear of corn in her hand, is a proper emblem of August, the usual time of harvest. LIBRA, the Balance, is displayed in September, to signify, that in that month the sun enters the autumnal equinox, and dispenses an equal portion of day and night to every part of the globe. SCORPIO, the Scorpion, was adopted as the emblem of October, on account of the venomous diseases which then afflict the earth. SAGITTARIUS, the Archer, distinguishes November as the proper season for hunting. CAPRICORNUS, the Goat, for its activity in climbing the steepest mountains, became the hieroglyphick of December; when the sun, after having passed the winter solstice, ascends again towards the equinoctial. AQUARIUS, the Water-bearer, with his heavy urn, represented January, on account of the rains, which were then most frequent; and lastly, PISCES, the Fishes, were very pertinent emblems of the fishing-season, which began in the Nile during the month of February, when the river, after overflowing the country, had returned to its natural channel.

To gratify the curiosity of our readers, as far as our plan will permit, it may not be amiss to observe, that according to the opinion of many astronomers, the obliquity of the ecliptick to the equator has been always gradually decreasing, and their respective planes continually approaching to a coincidence. This opinion is not only supported by a comparison of ancient and modern observations, but by the consideration of the figure of the earth; for as the earth, as before observed, is flattened towards the poles, like an orange, the sun, being always in the plane of the ecliptick, may easily be conceived to exert its attractive power upon the protuberant parts of the equator, so as to be continually drawing the plane of it to a coincidence with that of the ecliptick, and thus diminishing the angle between them.

We have already observed, that the plane of the ecliptick makes an angle of 23° 28′ with that of the equator, or equinoctial; as their axes, therefore, intersect each other in their respective centres, they must form the same angles; so that the poles of the ecliptick will be 23° 28′ from the poles of the earth.

The sun is eight days longer in the northern half of the ecliptick than in the southern; and, consequently, the summer half year is eight days longer than the winter half. To conceive the reason of this, it will be sufficient to remark, that the orbit of the earth is elliptical; that the sun is placed in one of the *foci*[*] of the ellipsis; and the earth is nearest to that focus, and consequently, to the sun, at the latter end of December, (or in the eighth degree of Capricorn,) and farthest from it at the latter end of June (or in the eighth degree of Cancer), as is evident from the diameter of the sun appearing to be largest at the former of those times, and smallest at the latter. It having, therefore, been discovered that the velocity of any planet which moves round the sun, will always increase as its distance from the sun decreases, and *vice versa*, it will follow that the motion of the earth in its annual orbit will be swifter in the winter than in summer, and, consequently, that the sun will appear longer in the northern half of the ecliptick than in the southern.

As none of the orbits or eclipticks of the planets make an angle of above eight degrees with that of the earth, it has given rise to that imaginary belt or zone round the celestial globe which is formed by

[*] *Foci*, the plural; *focus*, singular; point of concentration.

describing on *each side* of the ecliptick a parallel circle at the distance of eight degrees broad, called the Zodiack, as described above.

OF THE EQUINOXES AND SOLSTICES.

1.—EQUINOXES.

There are two equinoxes, the *Vernal* and the *Autumnal*. The Vernal Equinox is when the sun enters Aries, which commonly happens about the 21st of March. The sun then rises due east at six in the morning, and sets due west at six in the evening, all over the world, the Frigid zones excepted; consequently, the day and night are of an equal length; namely, twelve hours each.

The Autumnal Equinox is when the sun enters Libra, generally on the 23d of September. The time of the sun's rising and setting, and the length of the day and night, are then the same as at the Vernal Equinox.

2.—OF THE SOLSTICES.

The Summer Solstice is when the sun enters Cancer, generally on the 22d of June. The inhabitants of the Northern Hemisphere have then their longest days and shortest nights; but those of the Southern Hemisphere the contrary.

The Winter Solstice is when the sun enters Capricorn, generally on the 22d of December. The inhabitants of the Southern Hemisphere have then their longest days and shortest nights; but those of the Northern Hemisphere the contrary.

Obs. The term *Solstice* is derived from the Latin word *solstitium*, it being that time when the sun is at the greatest distance from the equator, and is thus called, because the sun then appears to stand still, and not to change his distance from the equator for some time,—an appearance owing to the obliquity of our sphere, and to which those living under the equator are strangers.

NATURAL HISTORY.

SERPENTS.

THEIR MODE OF ATTACK, AND AN ACCOUNT OF THEIR POISON.

The serpent tribes are distinguished from all other animals by a peculiar character, in which their figure, motion, and habits, so repulsive and disgusting, form a striking contrast to the beautiful and variegated colours with which their skin is studded, adding, if possible, to their subtle and venomous appearance; while their crawling motion strikingly exemplifies the *decree of the Creator*, made after the temptation and fall of man:—"Because thou hast done this, cursed art thou above all cattle, and every bird of the field; upon thy belly shalt thou go, and dust thou shalt eat all the days of thy life."

The tribes are very numerous, and have been divided by La Cepede into eight genera, each of which are subdivided, and contain many species. The genera comprise the Boas, containing 11 species; the Rattlesnake, 6 species; the Vipers, 196 species; the Snakes, 24 species; the Amphisbœna, 5 species; Langrata, 1; Cœcilia, 2; and Acrochord, 1.

Although destitute of feet and wings, few animals are so active as serpents, or can transport themselves from place to place with equal agility. Whether to seize its prey, or escape from danger, the serpent moves with the velocity of an arrow, and surpasses several species of birds in the ease and rapidity with which it gains the summits of the highest trees, twisting and untwisting its flexible body around their trunks and branches with such celerity, that the quickest eye can scarcely follow its rapid motion. Their size greatly varies; some are but a few inches long, while others are forty or even fifty feet in length. All are covered with scales, or scaly tubercles. Their brain case is weak and shallow; and hence serpents are easily killed by a blow on the head. The formation and conjunction of the vertebra are well adapted for mobility.

All parts of their body have great force, agility, and elasticity. They are most abundant in warm and temperate regions; but increase in size and numbers, in proportion to the heat and moisture, and to the freedom of their range. They have less blood than quadrupeds, a lower animal heat, and less interiour activity of system. They are more animated in times of tempest and hurricane, when the electricity of the atmosphere is in the greatest perturbation. Their sense of hearing is dull, but their vision acute. Their sense of taste is probably of considerable delicacy, as the tongue is very slender, and divided into two joints, which admit of its being readily applied to sapid[*] bodies. Their sense of touch is probably obscure. They give many indications of high instinct and sensibility, and have the faculty of existing a long period without food.

They have no voice, but a hiss, which is uttered softer or stronger according to the exciting cause. It is exerted exclusively in the declaration of their fiercer passions—the milder sensibilities are not accompanied by any vocal annunciation.

Serpents have great strength from the peculiar construction of their body. They are very tenacious of life. They have been, from all antiquity, and in most countries, celebrated for their great cunning and sagacity; which is chiefly displayed in their mode of evading their enemies, or of obtaining their prey. Some serpents are eminently noted for their brilliant colours, of which several display fine iridescent changes. It is a curious distinction of those animals, which has lately been made by M. de la Borde, of Cayenne, that all the species of serpents of which the young are hatched within the mother, and which are therefore born alive, are venomous.

Many of the serpents are totally harmless. They only offer to our consideration agile movements, elegant and light proportions, and soft and brilliant colours. They are an addition to the ornaments of the fields; and help, with the other animated beings, to embellish the vast and magnificent theatre of vernal nature.

Of the others, the enormous and deadly boa twists itself round calves, and sheep, and goats, to crush their bones; and then poisoning them with its fangs, swallows them whole. It has been seen to overcome the buffalo, and even the tiger, in this way, though not till after a desperate struggle, (*see engraving*). The rattlesnake, cerastes, viper, &c., are all of the same destructive habits.[†]

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[*] Tasteful—palatable.

[†] See Turner's Sacred History of the Earth.

A BOA DESTROYING A TIGER.

The poison fangs of serpents are two teeth, fixed in the upper jaw, which answer to the canine teeth of quadrupeds. Their form and functions were first demonstrated by Dr. Mead, in his work on Poisons. He says, "They are manifestly hollow from their root, a considerable way, not to the very apex, or point (which is solid and sharp, the better to pierce the skin), but to a small distance from it, as is plainly seen by splitting the tooth through the middle. This tubular cavity ends at the front of the tooth in a small slit, which is the emissary, or outlet, of the poison."

Galen has given us a considerable hint of this make of the tooth: for "the mountebanks," he says, "used to suffer themselves to be bit by vipers, having first with some paste stopped the holes of their teeth, that the venom being kept in, the spectators might think they did, by their antidotes, secure themselves from its dangerous effects."

The poison tooth is connected with a very beautiful chain of bones, which, by the assistance of appropriate muscles, raise it for inflicting the bite. Before and after that, it lies folded back in the mouth.

The poison is secreted in two conglobate glands, which lie one on each side of the head; and is carried by ducts to the root of the fangs, where it is discharged into the poison-bag. This consists o
cular fibres, both longitudinal and circular, by
it contracts when the fangs are erected, and b
contraction the poison is pressed into the hole
root of the tooth, and forced out at the apertur
the point.

The poison itself is an acid with many sali
gredients, which rapidly crystallize on expos
the atmosphere. It exists only in small quan
but a very small drop is sufficient to produce d

In the engraving, a full grown boa constric
represented destroying a tiger. Its mode of
dure is as follows:—The serpent lies coiled i
top of some lofty tree, where, hid from observ
it securely watches every thing that passes be
Should an animal, a tiger for example, approa
spot, and the appetite of the serpent be stro
cautiously descends to within a proper dis
fastens its tail by several folds to a branch, an
fixed, throws its whole length upon the aston
animal, coils with inconceivable rapidity roun
body, and striking his fangs deep into the flesh, i
the "cruel venom." Convulsions, sickness
death follow. The serpent then coils itself
the body of its victim, and by a tremendous ex
of muscular power, crushes the bones, and re
the whole to a cylindrical form, and then co

it with slime, slowly swallows it. Having thus gorged his prey, he lies in a torpid state, for a shorter or longer period, in some cases exce- months.

BLACK-TAILED DEER OF NORTH AMERICA.

The ruminant animals abound in our country. The deer species come along the first to our notice. The moose was formerly found in all parts of New England, but is now confined to Maine, and the N. W. Territory, and is there becoming unfrequent. Judging from the rapid diminution of this species within a few years, it is feared that it will at no great distance of time be exterminated. The American elk is a stately and beautiful animal, which it is believed at some period ranged over the larger portion if not the whole of the continent. The common deer is the smallest American species at present known, and is found throughout the country between Canada, in the north, and the banks of the Orinoco in South America. It has always been of great importance to the aborigines, as an abundant source of food and raiment: nor has its value been less to the pioneers of civilization, in their advances into the untrodden solitudes of the west. The improvements in agriculture have long since rendered this supply of food of comparatively little value to the white man; yet vast numbers of this species are annually destroyed, for the sake of its flesh, hide, and horns. Notwithstanding this extreme consumption, the species does not appear to be rapidly diminishing, if we except the immediate vicinity of very thickly-peopled districts. Even in those places where the destruction of the deer during the breeding season is prevented by law, the increase seems quite equal to the demand; and such humane and judicious provisions will probably preserve this beautiful race to adorn our forests, long after the species is exterminated, in situations where it is not thus protected.

The black-tailed deer, represented by our cut, and sometimes termed the mule deer, is also a native of North America. It inhabits the sides of the mountains, in the districts frequented by immense herds of buffaloes, and also by the wapti and large moose deer. The French Canadians call it 'Chevreuil,' while the people of Hudson's Bay denominate it the 'jumping deer.' It is found only to the westward of 105° west longitude, and goes no farther north than the bank of the river Sadcatchewan, in latitude 54°. It is occasionally hunted by the Indians in that quarter, and begins to attract some attention from the traders, since information has been given respecting it by Lewis and Clark. It was almost unknown previous to their expedition.

When roused, this deer makes off by a series of uninterrupted bounds, raising all its feet from the ground at once, and vibrating its black-tipped tail from side to side. The height of a full grown doe, has been found to be rather less than two feet and a half.

OF THE GREEK PHILOSOPHERS AND THEIR DIFFERENT SECTS.

Philosophy among the Greeks, signified the love of wisdom or science; it contains two distinct branches, viz., the study of nature, which elevates and ennobles the soul, and the study of morality, which inspires virtue, and conducts man to happiness.

Many celebrated men point out divers tracks to arrive at wisdom and happiness, and the difference of their principles gives rise to a great number of sects, of which the following are the most famous.

The Greeks possessed two principal schools: viz., the Ionick and Italick; the former was founded by Thales, of Ionia, the latter by Pythagoras, of the island of Samos, who quitted his native country, and afterwards fixed himself in Italy; hence its name *Italick.*

The first of these sects was that founded by Thales, who flourished about the year 680 before the Christian era. Thales was a native of Miletus in Ionia, hence his followers assumed the name of Ionick.

Thales was one of the seven wise men of Greece. He was descended from Cadmus. Like the rest of the ancients, he travelled in quest of knowledge, and for some time resided in Crete, Phœnicia, and Egypt.

He was the first who studied the stars, calculated with accuracy a solar eclipse, and fixed the measure of time. Like Homer, he looked upon water as the principle of all natural things. His followers are called the Ionick sect.

Anaxagoras, the preceptor to Pericles, Socrates, and Euripides, was one of his disciples; but the honour and glory of his school was the famous Socrates, the wisest, most virtuous, and perhaps the most perfect of men.

Anaxagoras disregarded wealth and honours, to indulge his fondness for meditation and philosophy. He also travelled into Egypt for improvement, and used to say, that he preferred a grain of wisdom to a heap of gold. He applied himself much to astronomy, and was acquainted with eclipses; but his ideas concerning the heavens were wild and extravagant. Pericles often consulted him in matters of state; and once dissuaded him from starving himself to death.

Socrates was the creator of fine morals, and foretold immortal truths. He believed in the unity of God, in the immortality of the soul, and in the rewards and punishments of another life.

Socrates had a number of distinguished disciples; among whom were Antisthenes, Alcibiades, Xenophon, Aristipes, and Euclides, but the most famous of all was Plato.

Socrates was a native of Athens, and was born about 451 years B. C. He was fond of labour, and so inured himself to suffer hardships, that he acquired that serenity of mind, and firmness of manner, which the most alarming dangers could never destroy, nor the most sudden calamities surprise, nor even move.

He was always attended by a great number of illustrious pupils, whom he instructed by his exemplary life, as well as by his doctrines. The philosophy of this great man forms an interesting epoch in the history of the human mind.

His actions, sayings, and opinions have been faithfully recorded by two of the most celebrated of his pupils, Xenophon and Plato. It was to the examples set by Socrates that the Greeks were particularly indebted for their greatness and splendour.

Plato was also a native of Athens, but he did not confine himself, like his master, Socrates, to the subject of morals alone, but studied every branch of philosophy.

His thirst after knowledge prompted him to travel into Egypt, Italy, Sicily, and Persia, where he acquired various branches of knowledge, generally unknown.

Plato is the founder of what is called the Academician sect. His works are numerous, and excepting twelve letters, are all written in dialogue. They abound with the most lofty sentiments, and with the most useful maxims for the conduct of life, and for the science of government. His principal works were a Discourse on the Immortality of the Soul, and a Treatise on the Republick.

He was succeeded in his school by his nephew Spensippas. But his scholars after his death, distinguished themselves into two sects, the followers of the one continuing the name of Academicians, and to teach in the same place where Plato had taught; and those of the other, that of Peripateticks, who gave their lessons in the Lyceum.

Of the numerous disciples of Plato, Aristotle, preceptor of Alexander the Great, was the most famous. He was a native of Stagira, a city of Macedonia. He was born 384 B. C.

Aristotle first went to Athens to study philosophy under Plato, at the age of seventeen; and applied himself with such industry and success in acquiring his master's doctrines, that he soon became the soul of his school.

After spending several years in the education of Alexander, he returned to Athens, and opened a school in the Lyceum, where he founded the sect called the Peripatetick, so named because he was accustomed to give his lessons walking. His lectures drew together a vast crowd of hearers.

He is looked upon as the greatest and soundest genius of antiquity. His works are also very numerous, but the most esteemed are his treatises on logick, rhetorick, poetry, and politicks. His treatise on rhetorick has been justly regarded by the learned of all ages as the most accurate and complete that has ever yet appeared.

Aristotle met with the fate of most great men. He attracted the envy of his contemporaries, who accused him of impiety. To disappoint the malice of his enemies, and to avoid the unhappy fate of Socrates, he fled to the island of Eubœa, where he survived his retreat from Athens only a few months, when vexation and regret are supposed to have ended his days.

Antisthenes, an Athenian was the founder of the Cynick sect; he placed happiness in virtue, and virtue in the contempt of riches and enjoyments of life.

He taught rhetorick, and had among his pupils the famous Diogenes; but when he had heard Socrates, he shut up his school, and said to his pupils, "Go, seek for yourselves a master; I have now found one."

One of his pupils asked him what philosophy had taught him? "To live with myself," said he. He sold his all, and preserved only a very ragged coat, which drew the attention of Socrates, and tempted him to say to the Cynick, who carried his contempt of dress too far, "Antisthenes, I see thy vanity through the holes of thy coat."

Diogenes, his disciple, carried these maxims even to delirium, and personal independence to the forgetfulness of all decorum.

He dressed himself in the garment which distinguished their sect, and walked about the streets with a tub on his head, which served him as a house, and a place of repose.

Such singularity of conduct soon gained him reputation, and Alexander the Great condescended to visit the philosopher in his tub.

He asked Diogenes if there were any thing in which he could oblige him: "Get out of my light," was the only answer which the philosopher gave him.

Such an independence of mind so pleased the monarch, that he turned to his courtiers and said, "Were I not Alexander, I would wish to be Diogenes."

The doctrines of austerity of this sect were followed no longer than Antisthenes and Diogenes were themselves examples of the cynical character; and after their death they were all forgotten.

Zeno, a native of the island of Cyprus, was the founder of the sect called the Stoicks. This sect may be said to be the Cynick reproduced, but stripped of its vices, and adorned with all its virtues.

The Stoick sect is the most noble that man can follow, and the most capable of ennobling humanity. The true Stoick follows virtue by instinct, and practises good by choice.

He approaches nearest to the divinity; in a word, he is the perfect sage, who perhaps never existed.

Among the most illustrious followers of his doctrine, and as the most respectable writers, were Epictetus and Seneca.

The finest characters of antiquity, Epaminondas, Trajan, and Marcus Aurelius, professed the maxims of the Stoick school, which ought particularly to be that of sovereigns, and of all who conduct or govern men.

Zeno was born about 300 years before the Christian era. His native place, Cyprus, having been originally peopled by a colony of Phœnicians, he is sometimes called a Phœnician.

The place he made use of for his school was a publick portico, which was adorned with the pictures of the most eminent painters.

It was the most famous portico in Athens, and called by way of eminence "The Porch." It was from this circumstance that the followers of Zeno were called Stoicks.

The Italick school was founded by Pythagoras, about the year 500 before the Christian era. He did much honour to Greece, and much good to Italy.

He is said to have travelled into Egypt, Phœnicia, Chaldea, and India, in quest of knowledge. Though a great geometrician and astronomer, he looked upon virtue as the first of all the sciences.

After having taught some time in Greece, he went into that part of Italy which is called Magna Græcia, on account of the colonies which had settled there.

He resided chiefly at Crotona and Tarentum, where he openly harangued in the cause of virtue, and produced a great revolution in the ideas and manners of the people.

His opinion was, that there were but five things which ought to be combated; viz., the diseases of the body, the ignorance of the mind, the passions of the heart, seditions in cities, and discord in private families.

Pythagoras introduced into the Western world a doctrine which he had imbibed somewhere in the East, where it had prevailed from the most early ages.

This doctrine was the transmigration of souls from one body into another; as, for example, if a man were vicious and wicked, his soul animated the body of some unclean animal, and passed through a progress of misery proportioned to his crimes in this life.

Hence Pythagoras and his followers, religiously abstained from eating flesh, lest they should devour that of their former friends and acquaintance.

The accounts of this philosophy which have been transmitted to us, are, in all probability, very imperfect; and in nothing, perhaps, more so than in its real scope and meaning. Let us, therefore, on this point, as on every other of the same kind, be extremely cautious in condemning. As it at present stands, it appears truly ridiculous and absurd.

Epicurus, a celebrated philosopher and founder of the Epicurean sect, was a native of Gargettus, in Attica. Though of poor parents, and of an obscure origin, he was sent early to school, where he soon distinguished himself by the brilliancy of his genius.

The doctrine originally maintained by Epicurus and his followers, was, that the happiness of mankind consisted in pleasure, not such as arises from sense, or gratification, or from vice, but from the enjoyments of the mind, and the sweets of virtue.

After a time, however, the doctrine of this sect became equivocal. It was when the disciples of Epicurus held that pleasure was the *summum bonum*, or chief good, of man; which leaves it undefined.

Hence there arose two kinds of Epicureans, the *rigid* and the *remiss:* the first were those who understood Epicurus's notion of pleasure in the best sense, and placed all their happiness in the pure pleasures of the mind, resulting from the practice of virtue; the loose or remiss Epicureans, taking the words of that philosopher in a gross sense, placed all their happiness in bodily pleasure or debauchery.

The term Epicurean, as at present used, signifies a person who is effeminate and fond of ease, and is luxurious in eating and drinking, consulting only his private and particular pleasure.

BIOGRAPHY.

CHARLES CARROLL.

Charles Carroll, of Carrollton, was born on the twentieth of September, 1737, at Annapolis, in the state of Maryland. He descended from a highly respectable Irish family, who had emigrated to this country in the reign of William and Mary, and were distinguished as patriots in the troubles of the colony, which soon after that period sprung up. For a while, the Catholicks were persecuted, and deprived of the right of suffrage; but, by a manly resistance to tyranny, they were restored to the privileges granted to them by charter

At a very early age Charles Carroll, of Carrollton, was sent to St. Omars, to be educated; from thence, after a short time, he was removed to Rheims, to the college of Louis Le Grand; and from thence to one of the best institutions in France for the study of civil law. After becoming well versed in this science, more calculated than any other to expand the mind for the reception and discussion of great political truths, he passed over to London, and commenced his term at the Temple for the study of common law. This study sharpens the wits, and opens the great fountain of Anglo Saxon liberty to the patient investigator of English history. After finishing his studies and his travels, he returned to his native land at the ripe age of twenty-seven, and was hailed by the best judges as a well-read scholar and an accomplished gentleman. Foreign courts had not damped his love of liberty. At this period the discussions with the mother country and the colonies, upon great points of national law, had commenced, and soon were carried on with great warmth and pertinacity by both parties. Mr. Carroll did not hesitate for a moment, but took side with the lovers of liberty. He wielded a ready pen, and it was soon engaged in the glorious cause. Like others, he for some time did not wish to be known; but his writings were so satisfactory to his countrymen, that his secret could not long be kept. Some of his political antagonists were among the first men in Maryland. He foresaw that an appeal must be made to arms, and he boldly advanced his sentiments on this head, and recommended due preparations for such an event. At this time but few voices had been raised to this in any part of the country. Early in 1776, he was sent as one of a commission to Canada, to induce the people of that province to join us in opposing the mother country. The disasters which had previously befallen our arms in that quarter rendered the mission ineffectual. Mr. Carroll returned in June, 1776, and instantly repaired to the convention of Maryland, of which he was a member; and there, urging them to withdraw the instructions that body had given their delegates in congress, not to vote for independence, at length found his exertions crowned with success. Mr. Carroll was now appointed a delegate to congress, and, with his colleagues, was free to act upon the great question as they pleased.

On the eighteenth of July, he presented his credentials to the continental congress at Philadelphia, and on the second day of August following, subscribed his name to the immortal instrument. He was considered now as the most fearless man of the age; for he had more to risk, in point of property, than any other man in the whole community, Hancock not excepted. On the first day he entered congress he was appointed to the board of war, of which he was an efficient member.

During the whole of the perilous conflict he bore his part with unabated ardour, often being at the same time a member of the convention of his native state, and a member of congress; a double duty, which required great energy and industry to perform; but, so ably did he discharge his duties, that both bodies were satisfied with his attention to each. In 1778, he left congress, and devoted himself to the councils of his native state, but always with an eye to the great interests of the nation.

When the constitution of the United States went into operation, Mr. Carroll was elected a senator from Maryland, and took his seat at the city of New York, at the organization of the government, on the thirtieth of April, 1789. He was elected a second time to this situation.

He was never an office-seeker, nor ever from caution or timidity flinched from any honest responsibility, in the darkest hour of the republick.

In the year 1801, he quitted publick life, as far as such a man could do so. He had now reached his grand climacterick, and was willing and desirous that younger men should take the field of politicks, hardly dreaming then that he was to enjoy another age of man, in the fulness of intellectual vigour. The last thirty years of his life passed away in serenity and happiness, almost unparalleled in the history of man. He enjoyed, as it were, an Indian summer of existence, a tranquil and lovely period, when the leaves of the forest are richly variegated, but not yet seared; when the parent-bird and the spring nestling are of the same flock, and move on equal wing; when the day of increase and the day of the necessity of provision are gone; when the fruits of the earth are abundant, and the lakes of the woods are as smooth and joyous as if reflecting the bowers of Eden. Such an Indian summer this patriot enjoyed; his life was thrice, yea, four times blessed; blessed in his birth and education, in his health, in his basket, and in his store; blessed in his numerous and honourable progeny, which extend to several generations; blessed in the protracted measure of his days, in which were crowded the events of many centuries; and blessed in the wonderful prosperity of his country, whose population has since his birth increased from nine hundred thousand souls to more than twelve millions, enjoying the blessings of freemen. It is, perhaps, from the fact, that the world think it quite enough for one mortal that he should be virtuous, prosperous, and enjoy a green old age, that an analysis of his intellectual powers, or a description of his rare attainments, has seldom been attempted; but talents and attainments he had, that made him one of the most successful of the business men of the momentous period in which he lived—a period when that which the head conceived the hand was ready to execute. There were too few at that time, and those too zealous, to make the proper division of labour. The senator armed for the field, and the soldier met with the Conscript Fathers.

Mr. Carroll was an orator. His eloquence was of the smooth, gentle, satisfactory kind, delighting all and convincing many. It is not pretended that, like John Adams, he came down upon his hearers as with the thunderblast from Sinai, raising the tables of independence on high, and threatening in his wrath to break them if they were not received by the people; nor that, like Dickenson, he exhausted rhetorick and metaphysicks to gain his end, and was for ever striving to be heard; but Carroll came to his subject well-informed, thoroughly imbued with its spirit; and with happy conceptions and graceful delivery, and with chaste and delicate language, he, without violence, conquered the understandings, and led captive the senses of his hearers. All was natural, yet sweet and polished as education could make it. He never seemed fatigued with his labours, nor faint with his exertions. His blood and judgment were so well commingled, that his highest efforts were as easy and natural as if he had been engaged in the course of ordinary duties. This happy faculty continued with the patriarch until his latest days, for his conversation had that elegant vivacity and delicacy that characterized the sage Nester of elder times, whose words fell like vernal snows as he spake to the people.

His serenity, and in no small degree, perhaps, his longevity, were owing to the permanency of his principles. In early life he founded his political creed on the rights of man, and reposing his faith in the religion of his fathers, he felt none of those vacillations and changes so common in times of political or religious agitations. Mr. Carroll died near the close of 1832, in the ninety-seventh year of his age.

New York Mirror

CHYMISTRY.

PHOSPHORUS.

Phosphorus was discovered by Brandt, an alchymist of Hamburgh, in 1669. The process was kept a secret for a long time, but was at length rediscovered by Boyle, of England; and a pupil of his by the name of Hankwitz, sold it at a very high price in a small shop in London, near Covent Garden theatre, which it is said is still standing.

Phosphorus is generally prepared from burnt bones, which contain this element in combination with lime. The materials, mixed with charcoal are put into an earthen retort, and at a very high heat the phosphorus is separated from its combination, raised in vapour, and condensed by inserting the tube of the retort in cold water, where it is received.

Pure phosphorus is nearly transparent, and of about the consistence of wax, having the same lustre when cut with a knife. It may be melted in water at the temperature of 108°, and at 550° is converted into vapour. It is soluble in spirits of turpentine, olive oil, ether, &c., and the solutions thus formed, are exceeding poisonous when taken internally The odour of phosphorus resembles that of garlick.

When exposed to the air, it gives off considerable light, which is exceedingly pale, and was formerly supposed to be unaccompanied with heat, but late experiments show that heat is given out, which may be rendered sensible by a very delicate thermometer.

It is exceedingly inflammable, when a small piece is immersed in chlorine, it takes fire spontaneously: in oxygen it takes fire by raising the temperature to about 98°, and burns with intense light. When burnt in chlorine, the product is a chloride of phosphorus; when burnt in oxygen or air, the product is an acid called phosphorick acid. It is easily kindled by rubbing it between two folds of brown paper, hence it is often resorted to, especially in the laboratory, to kindle fires by setting fire to the phosphorus, and then lighting a sulphur match. A taper cannot be lighted without difficulty from the flame of phosphorus, because the vapour of phosphorick acid, which is formed by its combustion, extinguishes common flame, but not that of sulphur, under ordinary circumstances.

Phosphorus has the property of absorbing a number of gases, and amongst these, oxygen stands pre-eminent; hence phosphorus is used for the purpose of analyzing mixtures of gases containing oxygen.

Thus the composition of the air is ascertained by exposing to it a piece of phosphorus in a graduated glass tube. The phosphorus absorbs all the oxygen, and leaves the nitrogen unacted upon.

I have lately ascertained by experiment, that carbonick acid is also absorbed in large quantities by phosphorus; hence common air containing carbonick acid, cannot be correctly analyzed by means of phosphorus alone, because both the oxygen and carbonick acid would be absorbed at the same time, leaving no means of ascertaining their relative proportions.

There are generally described three or four combinations of phosphorus and oxygen, but as none of them except phosphorick acid possesses much interest, a particular description of them will be omitted here.

PHOSPHORICK ACID.

This compound is always formed when phosphorus is burned in pure oxygen or in air. The luminous appearance of phosphorus, when exposed to the atmosphere, is owing to its slow combination with the oxygen forming phosphorick acid.

If a quantity of the sticks of phosphorus be exposed in an open vessel, containing a little water, to the air for a few months, the sticks of phosphorus will sensibly diminish, and a quantity of liquid phosphorick acid will be found in the cup.

Phosphorick acid is a crystalline solid, and, when prepared by burning phosphorus in a jar of oxygen, it appears in the form of white flakes like snow.

It is rapidly liquefied by exposure to the air, from the absorption of its moisture. The liquid thus formed is intensely sour to the taste, reddens vegetable blues, and combines with alkalis and oxydes of metals, forming salts, which are called *phosphates*. More than half the weight of animal bones, consists of phosphorick acid in combination with lime.

The composition of the compounds of phosphorus and oxygen are difficult to determine. Formerly, phosphorick acid was considered a compound of one equivalent of phosphorus and two of oxygen; but more recent experiments indicate that it contains two equivalents of phosphorus united to five of oxygen. On account of the uncertainty which still remains, its equivalent has not been given.

There are two compounds of chlorine and phosphorus, but they have no useful application, nor sufficient interest to be described here. They are called *chlorides* of phosphorus.

There are two combinations of phosphorus with hydrogen described in the books, generally denominated *phosphuretted* and *perphosphuretted hydrogen*, from the relative proportion of the elements contained in each; but recent experiments prove that these proportions have not been satisfactorily determined, and the equivalent of each is therefore doubtful. The first has no very interesting properties, and the description of it will be omitted.

PERPHOSPHURETTED HYDROGEN.

This compound exists in the form of a gas, and is distinguished from every other by the remarkable property it possesses of taking fire spontaneously when it comes in contact with air or pure oxygen.

Perphosphuretted hydrogen is conveniently prepared by heating phosphorus in a strong solution of potash or pearlash.

Into a half-pint glass retort, put about a gill of a strong solution of potash or pearlash, and into this a dozen pieces of phosphorus, about the size of a pea, and having poured in a few drops of ether to prevent combustion from taking place in the retort, apply the heat of a spirit-lamp. The gas should be allowed to pass through a hot solution of pearlash in bubbles: as soon as the liquid in the retort begins to boil, gas will begin to be evolved, and will take fire when it comes in contact with the air.

Both the phosphorus and hydrogen which compose this gas are inflammable, and both unite with the oxygen of the air in the combustion. The hydrogen with oxygen forms water, and the phosphorus also, with oxygen, phosphorick acid; but it is chiefly the vapour of phosphorick acid that produces the rings of dense white smoke, which are constantly revolving and enlarging as they ascend.

The water contained in the retort is decomposed; its oxygen uniting to a portion of phosphorus forms phosphorick acid, while the hydrogen takes up another portion of phosphorus, forms the perphosphuretted hydrogen.

Perphosphuretted hydrogen is a colourless gas, a little heavier than air, and will not support the combustion of a taper, nor the respiration of animals. It is slightly absorbed by cold water; but by far the most remarkable property of the gas is that already mentioned, namely its spontaneous combustion in contact with oxygen or air.

There is no combination of phosphorus and nitrogen.

Gale's Chymistry.

PHOSPHURET OF SULPHUR.

Phosphorus and sulphur act with great violence on each other, and, it is probable, give rise to various compounds, in different proportions, which have not been completely examined. The combination may be effected by agitation under water, the temperature of which should not exceed 140° or 160° of Fahrenheit. The compound has a reddish-brown colour, and is fluid about 40° of Fahrenheit, or at the average temperature of the atmosphere. It does not act on water. It is more inflammable than phosphorus, and forms a good composition for phosphorick fire-matches.

ARMS OF THE UNITED STATES.

Although the study of heraldry may not be very amusing, yet, as the eagle with extended wings, grasping arms of war and the olive of peace, is constantly presented to our eyes in some way or other, it may not be uninteresting to give a history and an explanation of the arms of our country.

In June, 1782, when Congress was about to form an armorial device for a seal for the Union, Charles Thompson, Esq., then secretary, with the Hon. Dr. Arthur Lee, and E. Boudinot, member of Congress, called on Mr. William Barton and consulted him on the subject. The great seal, for which Mr. Barton furnished these gentlemen with devices, was adopted by Congress on the 26th of June, 1782. The device is as follows:—

Arms—Paleways of thirteen pieces, argent, gules, a chief azure: the escutcheon on the breast of the American Eagle, displayed proper, holding in his dexter talon an olive branch, and in his sinister a bunch of thirteen arrows, all proper; and in his beak a scroll, with the motto "*E pluribus unum.*"

The breast—Over the head of the eagle which appears above the escutcheon, a glory, or breaking through a cloud proper, and surrounding stars as many as there are states, forming a constellation, argent, on an azure field.

Reverse—A pyramid, unfinished. In the zenith, an eye in a triangle, surmounted with a glory, over the eye these words, "*Annuit Coeptis.*"

Remarks and Explanations.—The escutcheon is composed of the chief and pale, the two most honourable ordinances; the thirteen pieces pale represent the several states in the Union, all joined in one solid compact, entire, supporting a chief, which unites the whole, and represents Congress. The motto alludes to the Union—"*one of many.*" The pales in the arms are kept closely united by the chief, and the chief depends on that union—and the strength resulting from it, for its support, to denote the confederacy of the states, and the preservation of the Union through Congress.

The colours or pales are those used in the flag of the United States of America. *White* signifies purity and innocence; *red*, hardiness and valour; and *blue*, the colour of the chief, signifies vigilance, perseverance, and justice—the attributes of Congress. The olive branch and arrows denote the power of peace and war, which is exclusively vested in Congress.

The crest, or constellation, denotes a new state taking its place and rank among other foreign powers.

The escutcheon, borne on the breast of an American eagle without any other supporters, denotes that the United States ought to rely on their own virtue and strength, and not on the baseness and weakness of an enemy.

The pyramid, on the reverse, signifies strength and devotion. Its unfinished state refers to infancy of the American government.

The eye over it, and the motto "*Annuit Coeptis*" 'He sanctions our endeavours,' allude to the many signal interpositions of Providence in favour of the American cause.

Note. In heraldry, argent, signifies white; gules, red; and azure, blue. When these colours cannot be emblazoned, (painted in colours,) they are represented on shields, &c., as follows:—Argent, by a perfect blank; red, by perpendicular, and azure, by horizontal lines. The chief, in our arms, on the horizontal lines in the upper quarter of the escutcheon, or eagle's breast.

Poulson.

ORIGIN OF BEEFSTEAKS

The discovery of the chief sources of human enjoyment have all been attributed to some fabulous origin in the ancient world. The story of that important feature of dinner, the beefsteak, was thus given in the middle ages.

Lucius Plancus, a Roman of rank, was ordered by the emperour Trajan, for some offence, to act as one of the menial sacrificers to Jupiter; he resisted, but was at length dragged to the altar. There the fragments of the victim were laid upon the fire, and the unfortunate senator was forcibly compelled to turn them. In the process of roasting, one of the slices slipped off the coals, and was caught by Plaucus in its fall. It burned his fingers, and he instinctively thrust them into his mouth. In that moment he had made the grand discovery, that the taste of a slice thus carbonadoed was infinitely beyond all the old, sodden cookery of Rome. A new expedient to save his dignity was suggested at the same time; and he at once evinced his obedience to the emperour, by seeming to go through the sacrifices with due regularity, and his scorn of the employment, by turning the whole ceremony into a matter of appetite. He swallowed every slice, deluded Trajan, defrauded Jupiter, and invented the beefsteak! A discovery of this magnitude could not be long concealed; the sacrifices began to disappear with a rapidity and satisfaction to the parties, too extraordinary to be unnoticed. The priests of Jupiter adopted the practice with delight, and the king of Olympus must have been soon starved, if he depended on any share of the good things of Rome.

PHYSICAL GEOGRAPHY.

Of Water Generally. Of Springs, Rivers, and Lakes.

Water presents itself under three forms of aggregation; as a solid, when it is *ice;* as a liquid; and lastly, as a vapour or atmospherick gas. It was long regarded as an element, but modern chymistry reckons among its triumphs the discovery of the elementary substances, of which even water is composed. It is transparent and colourless, and has neither smell nor taste. It is a powerful refractor of light, conducts heat very slowly, and is an imperfect conductor of electricity. It is compressible by very strong pressure. It is one of the most powerful chymical agents, owing partly to the extensive range of its affinity, and partly to the nature of its elements. It is never found in a state of perfect purity; the purest water which can be found as a natural product, is procured by melting freshly fallen snow, or by receiving rain in clear vessels at a distance from houses. It contains a large proportion of oxygen and a considerable quantity of hydrogen gas. It can be made absolutely pure, by distillation.

Springs, which may be referred to a great variety of causes, are so many little reservoirs, which receive their waters from the neighbouring ground, through small lateral canals, and which discharge their excess either by overflowing, or in some other manner. The water which circulates on the surface of the globe has generally, it should be borne in mind, no other principle of motion than its own specifick gravity, and the declivity of the earth. Hence,

Spouting Springs, which sometimes form natural jets of water, are caused by that tendency to equilibrium; and the canals which furnish them with water, come from great elevations, and with a rapid descent. *Jets of boiling water*, which appear to accompany volcanoes, probably obey the same laws.

The *intermitting fountains*, particularly such as rise and fall at regular periods so excite the wonder of people, that they give them the name of *miraculous fountains*. They are periodical and very irregular. They are accounted for, by supposing, that in the lands where they are situated, there are reservoirs and conducting pipes in the form of syphons.

Many channels of water not finding any other suitable outlet, flow into subterraneous cavities, are absorbed by the earth, or discharge themselves below ground into the sea. We may thus explain the origin of those springs of fresh water that are to be seen spouting up even in the midst of the waves of the ocean. There are also doubtless deep subterraneous lakes of considerable extent.

The glaciers which crown the tops of the highest mountains, have a close connexion and a common origin with springs. Snows accumulated for whole centuries, sink down, and are compressed and consolidated as much by evaporation, as by alternate thaws and frosts. But the scenes which these bodies of ice exhibit, are as various as their extent.

The effusion of springs, and the flowings of melted ice, form little currents, more or less gentle, which are termed *rivulets*. The water of great rains falls more rapidly, and furrows the sides of the mountains by impetuous irregular *torrents*. The union of these currents forms *streams*, which, following the declivity of the ground, unite most frequently in a great canal which takes the name of *river*, and which conveys to the ocean the collected tribute of the earth. Rivers which descend from primitive mountains into the secondary lands, often form *cascades* and *cataracts*. These have many peculiarities and numerous varieties.

The declivities from whence flow the streams and rivulets which discharge themselves into one particular river, are called the *basin* of that river. The *beds* of rivers, are either formed by the same revolution that produced the mountains, or the waters have opened for themselves the passage.

When a river is obstructed in its course by a bed of solid rock, and finds beneath it a stratum of softer materials, its waters wear away the softer substance, and thus open for themselves a subterraneous passage. In many places, trees and forests fall on a river, nearly covering it with vegetable earth, and thus create a natural bridge which, for miles, hides the river from the view. In this manner do we account for the subterraneous disappearance of rivers, which so much excited the wonder of the ancients.

Rivers in running into the sea, present a variety of interesting phenomena. Some from *bars of sand*; others *bars of water*, or a swelling and dashing across the mouth of the river, caused by the conflict of the tide and current. The most sublime phenomenon of this kind, occurs at the mouth of the river of the Amazons. Twice a day, this giant of rivers, pours out its imprisoned waves into the bosom of the ocean. "A liquid mountain is thus raised of the height of 180 feet; it frequently meets the flowing tide of the sea, and the shock of these two bodies of water is so dreadful, that it makes all the neighbouring islands tremble; the fishermen and navigators fly from it in the utmost terrour. The next day, or the second day after every new or full moon, the time when the tides are highest, the river also seems to redouble its power and energy: its waters and those of the ocean dash against each other like the onset of two armies. The banks are inundated with their foaming waves; the rocks, drawn along like light pebbles, dash against each other, almost upon the surface of the water which bears them on. Loud roarings echo from island to island. One would say that the genius of the river, and the god of the ocean, contend in battle for the empire of the waves."

Extensive accumulation of water, surrounded on all sides by land, and having no direct communication with the ocean, or with any sea, are called *lakes*, and are of four distinct kinds.

The *first class* comprehends those which have no outlet, and which do not receive any running water.

The *second class* consists of those lakes which have an outlet, but which do not receive any running water. Such lakes are formed by a multitude of springs.

The *third class* of lakes is very numerous, and comprises such as receive and discharge streams of water. The great western lakes are of this class.

The *fourth class* consists of those which receive streams of water, and often great rivers, without having any visible outlet. It is presumed that the excess of water is carried off either by evaporation or subterraneous passages.

Periodical Lakes are formed by excessive rains and the melting of snow and ice and are dried up by the sun, by evaporation, and infiltration.

Most of the large lakes have regular tides, which doubtless may be referred to the same causes which produce the ocean tides. It has been long stated that there is a bay (Thunder Bay) in Lake Huron, where the atmosphere is so continually filled with electricity, that no one passes it without hearing thunder. That a thundering noise is heard may not be doubted, but that it is produced by electricity, is not believed to be the fact. Some lakes harbour other noises, emit gases, and blasts of wind of such tremendous strength as to throw pieces of ice into the air of more than a hundred pounds weight.

Floating islands are frequently found upon lakes. They are simply earth of the nature of peat, but very light, sometimes only reeds and roots of trees interwoven together. After having been undermined by the waters, they detach themselves from the bank, and from their lightness and spongy consistency, joined to their great extent and inconsiderable thickness, they remain suspended and floating on the surface of the waters. Some of them are covered with beautiful trees, and furnish pasturage for a great many cattle.

The *depth* of lakes varies infinitely. But they all have bottoms. Those which have been considered as without bottoms owe this character solely to the existence of currents which carry along with them the lead attached to the sounding line. Some are supposed to have double bottoms. In such, it is probable that a crust interwoven with roots, similar to the floating islands, may exist at the bottom, and by either rising or sinking, may make the depth apparently vary.

We shall next consider springs, rivers, and lakes with relation to their chymical nature.

THE FIVE SENSES.

THE SENSE OF SIGHT.—No. 2. LAWS OF VISION.

In our first article we explained the structure of the eye; we now proceed to describe the subserviency of its several parts to the production of vision; but, to make the matter quite plain, it will be necessary to consider, briefly, the constitution of light; and, as far as sight is concerned, the laws to which it is subject.

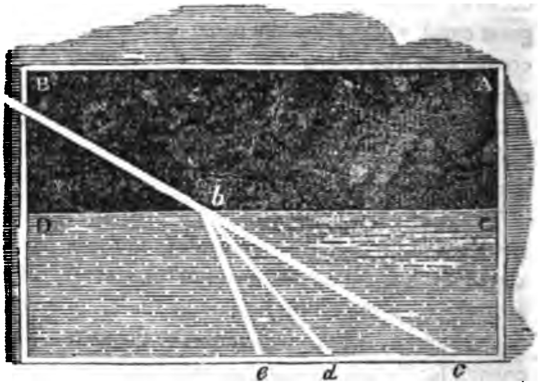
1. NATURE AND PROPERTIES OF LIGHT.

Light is believed to be a very subtile *fluid;* diffused through all nature. A *dark* room, therefore, contains as much *light* as if the noonday sun shone through its windows; it exists in a *latent* or hidden form; and if, in the midst of the darkness of the room, a flint and steel be struck together, the heat, generated by the percussion, will instantly make the hidden light visible. It follows from this, that light exists independently of the sun; which, in the manner of a lighted candle, and many other causes, merely excites it into visible existence. This circumstance, while it explains many optical difficulties, gives a strong and charming proof of the inspired truth and scientifick accuracy of the Mosaick history of the Creation, in which it is declared, that light was created *before* the sun.

Light consists of separate atoms, which travel in straight lines or rays, at the rate of eleven millions, seven hundred thousand miles in one minute of time. It is continually sent forth, in every direction, from all points of luminous or illuminated bodies. Trees, buildings, seas, animals, rocks, all bodies, in short, whether natural or artificial, which are not luminous in themselves, are made visible by light, which comes from (or, from a latent state, is made sensible by) the sun, or other sources of light; and the light which they throw off, or reflect, is invariably of the same colour as themselves, although the light which renders them visible is white. Thus it has been observed, by Sir David Brewster, the greatest optical philosopher of this or any age, that, "If we hold a white card before a rosebush, the surface of the card will appear of its usual whiteness; but if we place this card at one end of a box, shut up on all sides, and if having made a pin hole in the side opposite the card to admit the light from the rosebush, we look through another hole at the card, we shall see upon the card, and opposite each rose, a patch of red light, and opposite each green leaf, a patch of green light. These patches of colour constitute a picture of the rosebush turned upside down, which, though not very distinct in the outline, will yet be easily recognised. If we enlarge the small hole opposite the card, the picture will become more indistinct, and the colours more faint; and when the hole reaches a certain size, the red light from the roses will fall upon the same parts of the card as the green light from the leaves, and the card will appear of its original whiteness."

2. REFRACTION OF LIGHT.

A ray of light, in passing through the air, moves in a straight line; but if it be interrupted in its course, by being made to pass through water, oil, glass, precious stones, or a thousand other substances which it is needless to enumerate, it will, from the difference of constitution between them and the atmospherick air, change its direction; and this alteration in its path is called *refraction*, from a Latin word, which signifies *breaking back*, the ray being broken back or refracted from its straight-forward course.

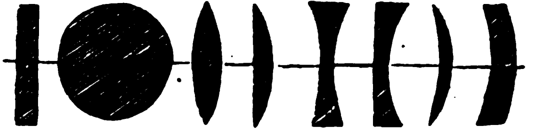


To make this plain, let *A B*, represent a dark box with a hole pierced in its side at *B;* admit a ray of light, *a*, from a burning candle, so that it may fall on the bottom of the box at *c*. Mark this point, and fill the box to the level *C D*, with water, when it will be seen that the point of light has shifted itself to *d*, and that the change has been effected by the refraction or breaking back of the ray of light from the point *b*, where it touches the water.

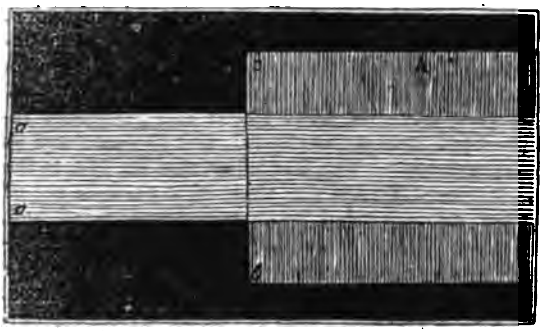
This change in the direction of the ray may be made still more evident by using spirits of wine, or a solid piece of glass, in place of the water. With the latter medium it would be refracted to *e*.

3. REFRACTION OF LIGHT BY LENSES.

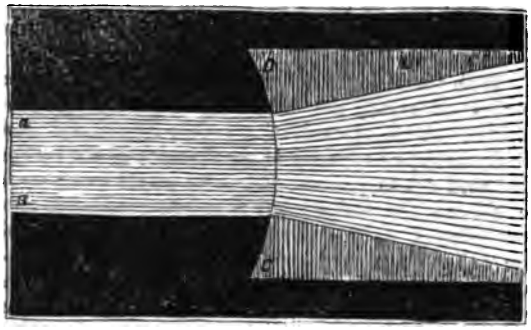
A lens is usually a circle of glass having its surfaces ground into the following or intermediate shapes.



Light, in its passage through these glasses, would be refracted in proportion to their greater or less degrees of convexity or concavity; but in passing through a plane lens, as shown in the cut, it would proceed in its course without deviation. A concave lens would, however, cause the rays of which it is composed to widen or diverge; and this it does, according to strict mathematical principles.

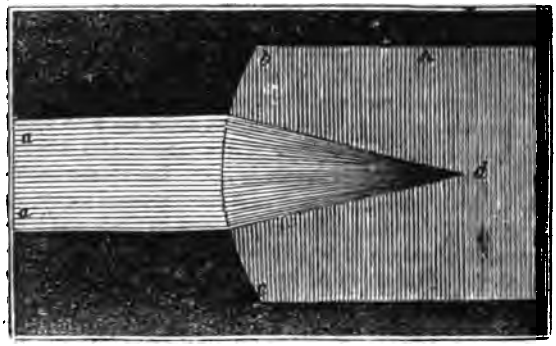


A, a solid oblong piece of glass; *a a*, a stream of light which strikes the surface of the glass, *b c*, and which, being *perpendicular*, suffers it to pass through without refraction.



A, a solid oblong piece of glass; *a a*, a stream of light which strikes the surface of the glass, *b c*, and which, being *concave*, causes the light in its passage through it to *diverge*.

The convex lens, which, (for our present purpose, it is important to observe) instead of diverging, or suffering the rays to pass straight through, causes the rays to contract or converge to a point in which they all meet, and which is called the focus of the lens.

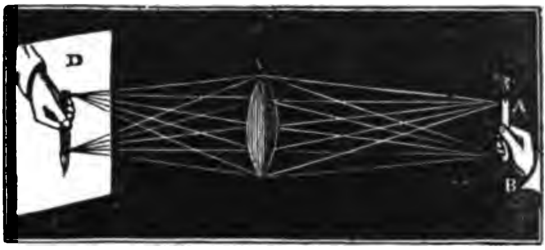


A, a solid oblong piece of glass; *a a*, a stream of light which strikes the surface of the glass, *b c*, and which, being *convex*, causes the light in its passage through it to *converge*.

Upon the property thus possessed by lenses of altering the course of luminous rays, and especially that of the convex lens, in converging them to a focus, the faculty of vision, as we shall presently see, in a primary degree, depends; for it is by this means that the light, from visible objects, is collected in the eye, and thrown upon the retina.

4. FORMATION OF IMAGES BY LENSES.

In the beautiful experiment of the card and the rosebush, mentioned in section 1, it was shown how an imperfect image might be formed by placing a small hole between the bush and the card, and shutting out all the external light. But if, in place of the hole, a double convex lens had been used, as in the following diagram, a perfect image of the object would have been formed.



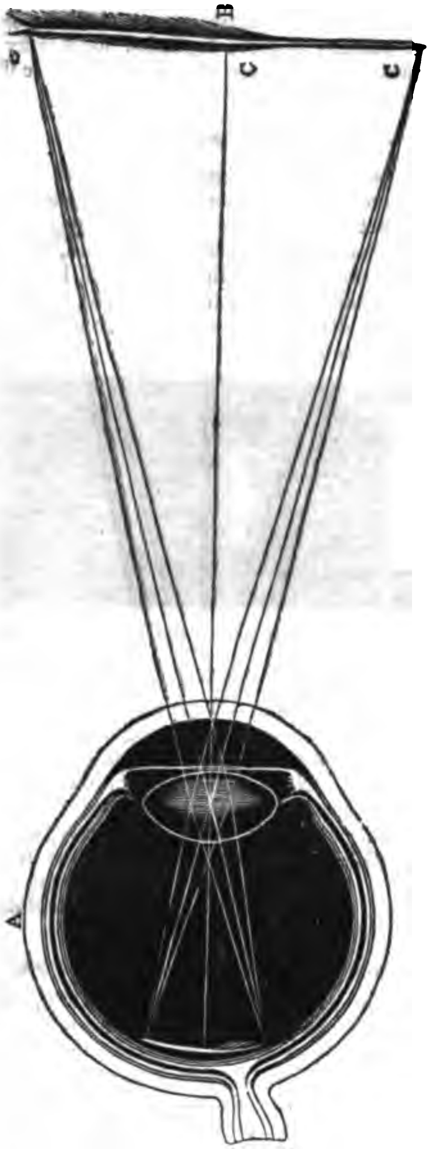
The principle upon which the image is formed is this:—

We have stated that light is continually sent forth in every direction from all points of luminous and illuminated bodies; and that the light thrown off by illuminated bodies is invariably of the same colour as themselves. Now, in the illustration before us, rays of light pass from the candle and the hand *A B*, and falling upon the lens *C*, are conveyed to the paper *D*, which is, in consequence, illuminated with an image of the object, between which and its original there is necessarily a perfect coincidence of form and colour.

5. FORMATION OF IMAGES ON THE RETINA.

It was not suspected, till the year 1575, that the images of objects were formed on the retina in the same way as those of the rosebush described, and the hand and candle exhibited in our illustrations. It was then that Maurolycus, a distinguished teacher of mathematicks at Messina, in a treatise *De Lumine et Umbra*, first demonstrated that the crystalline lens of the eye collects the rays of light from surrounding objects, and throws them upon the retina. About the same time Joannes Baptista Porta, of Naples, invented the *Camera Obscura*, by which he gave great popularity to the discoveries of Maurolycus. His experiments with this instrument convinced him that vision must be performed by the passage of light into the eye, and not by "visual rays" proceeding from the eye, as Euclid, Aristotle, and their unthinking successors taught. But when he says that the eye is a *camera obscura*, and the pupil the hole in the window shutter, he was so far mistaken as to suppose that it was the crystalline humour which corresponded to the wall that receives the images; nor was it discovered, till the year 1604, that this office was performed by the retina.

These remarks prepare us by anticipation to consider the theory of vision, which, divested of all technicality, and reduced to its simplest method of representation, is shown in the following diagram :—



Let *A* represent an enlarged figure of the eye, and *B* a pen, the exact form, colour, and distance of which the eye perceives in the following manner :—The pen throws off the rays of light *C*, by which it is illuminated, from every part of its surface, and in every direction : a portion of these rays fall upon the curved surface of the cornea, by which they are refracted from their straight-forward course and passing through the aqueous humour, enter the chamber of the eye, through the pupil, and fall upon the crystalline lens ; there they undergo a still greater refraction, and are converged to a number of angular points or focuses of condensed light on the surface of the retina, which is thereby impressed with an inverted picture of the pen, from which the rays came. The image thus delineated upon the retina, is conveyed, by an unknown process, to the brain, when the *presence* of the object is perceived. We say *presence* only of the object is perceived, because the faculty of distinguishing form, colour, and distance is a mental operation, totally distinct from simple vision, and depends upon the united exertions of the memory and the powers of comparison and combination. This being a very refined process, and one not of instinct, but of acquirement, is learned only by long process. We as much learn to see as we learn to walk ; and, separate from experience, the eye conveys as little information to the mind as the pages of a foreign book, the language of which is not known. In the one case we should see without seeing, as in the other, we should read without reading.

That true sight is the result not merely of vision, but of the combined powers which we have described, is strikingly exemplified in the account given in the Bible of the poor man who had been blind all his days, and who, when Christ had graciously restored him to sight, exclaimed, that he saw "*men* as *trees* walking." The fact being, that his eye, in the performance, for the first time, of the simple act of vision, was not aided by an experienced mind, and, consequently, could not, by an act of memory, compare or combine the impressions on the retina. The man, therefore, could not distinguish men from trees. This view receives ample confirmation from the daily experience of the hospitals, where similar cases constantly occur. We shall close by citing the cases given by Sir Everard Home, in his Comparative Anatomy, of two blind boys who were restored to sight by the operation of couching. One boy, on recovering sight, said that the doctor's head touched his eye ; and he could not tell its form. The third day he saw several gentlemen, but could not describe their figures.

With the second boy, ten minutes after the restoration of sight, the following experiments were made :—A round card, of a yellow colour, one inch in diameter, was placed at the distance of six inches. He said it was yellow ; and if he might touch it, he could tell the shape ; but this being refused, after considering it, he said, round. A blue *square* card, he called blue and *round*. A *triangular* one, he called *round*. He was asked if objects touched his eye ; he said, No ; but he had no idea of their distances. He was delighted at seeing, and said it was so pretty even to see the light.

(To be continued.)

CHIVALRY.

The institution and spirit of chivalry, forming a prominent and important feature of history, has been regarded by writers and men of erudition, in various points of view, and, while some have condemned it as altogether injurious and absurd, others have dignified it with the title of sublime. There have been found men of modern days, and those the fortunate possessors of more than common abilities, who could sigh over the degeneracy of the times, and lament that the age of chivalry is gone. But if the material and least worthy part of it have passed away, its spirit still remains, still invites men to high and honourable deeds, and is indeed imperishable and immortal. The vows of knighthood, the ceremonials of installations, the pomp and ceremony of knightly feats have gone, but the devotion of the patriot, the ardour of the warriour, the warmth of the lover, the fidelity of the friend, the royalty and truth of the man of honour, do not sleep in the graves of Charlemagne, Roland, and Bayard.

In seeking for the origin of Chivalry, we are led back to the feudal ages, and the consideration of the condition of the Geomanick tribes, when its peculiar spirit first began to display itself. The tribes were composed not of superiours and inferiours, but of masters and slaves; of men whose birthright was ease and and honour, and of others, who inherited the bond of ceaseless toil. By the noble-born labour of any kind was considered degrading, and the profession of arms alone worthy of being followed, so that the lords of the soil were a race of independent warriours, whose thirst for fame was a continual excitement. The different feudal sovereigns were nominally subject to a legitimate prince, and were bound to follow his banner into battle, at the head of their vassals, and to respond to his call by bringing at a moment's warning, an armed force to his support. Still, when removed from the presence of his sovereign, the feudal lord was a petty despot, whose vassals felt that he possessed absolute power of life and death over them.

Unlimited authority gave rise to various abuses, and it was well that Chivalry, with its high tone of honour and morality, sprang up in ages of general darkness, fraud, and oppression. Great enterprises contributed to bind numbers of knights together, and led to the formation of various societies and orders, and when these military adventurers were not leagued together in any of the Holy Wars, a reciprocity of principle, and an identity of religion, held them in a common chain. Animated by a love of justice, a veneration for the fair sex, a high-minded regard for truth, a thirst for military glory, and a contempt for danger, the knights went forth to brave peril, to rescue the unfortunate, and to crush the oppressor. Numerous individuals set forth with no fixed purpose but that of discovering some wrong and righting it, and these wandering champions were called *Knights Errant*, and their exploits sung in camp and court by the minstrels whose lays immortalized the sons of Chivalry. Chivalry degenerated, but not rapidly. After the lapse of many years from its foundation, the number of its ceremonials increased, its pageantry was disgraced by frippery and folly, its vows were unobserved; a devotion to the sex was succeeded by boundless licentiousness, and the wandering spirit of knight-errantry was displaced by an affectation of eccentricity.

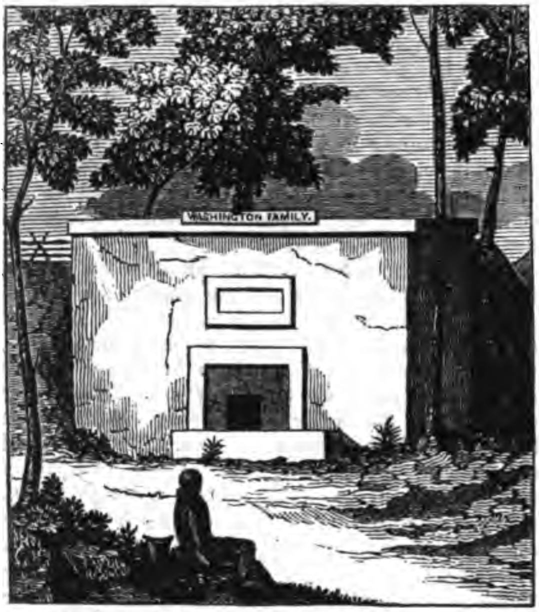
In the 14th century the honours of knighthood were restricted to the nobility, and then arose the various forms and ceremonies, which at length concealed the original design of Chivalry, and brought on a premature decline. The knightly education of a youth generally commenced with his 12th year, when he was sent to the court of some noble pattern of Chivalry, to learn dancing, riding, the use of his weapon, &c., and where his chief duty was assiduous attention to the ladies in the quality of page. According to his progress in years and accomplishments, he became squire to some knight, and when he fairly merited the distinction, he was himself knighted. This honour was not conferred upon a youth before his 21st year, unless high birth, or extraordinary valour and address seemed to warrant the setting aside of the usual regulation. Sometimes the honour was won by many a field of bloody toil, with many drops of sweat and gore, and not unfrequently, one daring achievement, artfully planned, and gallantly carried into execution, procured the wished-for spurs, and the anticipated *accolade*. The ceremony of conferring knighthood was often performed on the field of battle where the honour had been earned; often it required and received the most imposing preparations and ceremonies. The young candidate guarded his arms for a night, and this was called the *vigil of arms*. In the morning he bathed in water, which was the emblem of the truth and purity which he swore to preserve sacred. Clad in spotless garments, he kneeled before the altar of the nearest church, and, having presented his sword to the officiating priest, received it again with the benediction of the reverend man. After taking the oaths of allegiance, he knelt before his sovereign, who gave him the *accolade*, or blow upon the neck, with the flat of his sword, saluted the young warriour, and said: "In the name of God and St. Michael; (or, in the name of the Father, Son, and Holy Ghost,) I dub thee a knight. Be loyal, brave, and fortunate."

It was customary for two knights of the same age and congenial tempers to form a friendship, and this brotherhood in arms lasted generally until one of the two was laid in the grave. The courtesy of Chivalry softened the asperity of war, gave charms to victory, and assuaged to the vanquished, the pain of a defeat. All that ingenuity could plan, and wealth produce, to give splendour to knighthood, was displayed in the age of Chivalry. Magnificent tournaments were held, where even kings entered the lists and contended for the prize of valour before the eyes of thousands of spectators, among whom beautiful ladies appeared the most deeply interested. In fact the knights often contended about the charms of their lady-loves, and wore their favours in their helmets. If the ladies of Rome attended gladiatorial shows in throngs, we cannot wonder that the beauties of the age of Chivalry looked forward to a tournament with great impatience, and eagerly strove for the honour of filling the post of temporary queen and distributer of the prizes.

Chivalry exerted a powerful influence on poetry, and formed the subjects of the poems of the *troubadours* of the south of France, as well as supplied themes for the poetical controversies of the knights, which were decided at the *Cours 'd Amour* (courts of love), first established in Provence. Even after Chivalry had died away, its influence was not unfelt by poetry, which retained the tone it had imparted for many centuries. The songs of the troubadours were divided into amatory songs, duets, pastorals, serenades, ballads, poetical colloquies, &c. In the romances of Chivalry we behold paladins and peers, sorcerers, fairies, winged and intelligent horses, invisible or invulnerable men, magicians who are interested in the birth and education of knights, enchanted palaces; in a word the creation of a new world which leaves our vulgar planet far beneath it. Paladins never without arms, in a country bristling with fortresses, find their delight and honour in punishing injustice and defending weakness. The chivalrick romances may be divided into three classes; those of the Round Table, those of Charlemagne, and lastly, those of Amadis, which belong to a later century. It will suffice to speak of the former:

The romances of the Round Table recount tales of the cup from which Jesus Christ drank with Joseph of Arithmathea. This cup had performed such prodigies, that we are not astonished that those valorous knights of the Round Table, Lancelot, Perceval, and Perceforest, are united with the determination to recover it. These *preux chevaliers* are the perpetual heroes of these romances. Lancelot is attached to Genicore, the wife of King Arthur, and his marvellous exploits excited the admiration of contemporaries. Three centuries after, lords and ladies were still delighted at the recital of "the very elegant, delicious, mellifluous, and very pleasant historie of the very noble and very victorious Perceforest." Amidst many pages of wearisome insipidity, we find some happy descriptions and situations detailed, and graphick portraits of feudal men and manners.

The absurdities of Chivalry afforded scope for the satirical and comick powers of Cervantes, and the adventures of the unfortunate Don Quixote are read with an interest which few works of similar character inspire. Every feature of Chivalry is happily burlesqued, and the don goes through all the ceremonials with a ludicrous gravity which is perfectly irresistible. The pertinacity with which the knights maintained the pre-eminence of their affections is finely satirized in the election which Don Quixote makes of a hideous country wench, whose charms he celebrates after the most approved fashion and with unceasing devotion. Few ladies of chivalrick romance have attained a degree of reputation comparable to that of the immortal Dulcinea del Toboso.


WASHINGTON FAMILY.

WASHINGTON'S TOMB.

Washington was born Feb. 22, 1732, on the banks of the Potomack, in the county of Westmoreland, Virginia. On the 14th of June, 1775, he was chosen commander-in-chief of the armies of the United Colonies. He resigned his commission on the 23d of December, 1783. He was elected first President under the new constitution, 1789, and presided eight years. He died on Saturday night, the 14th of December, 1799, of an inflammatory disorder of the throat, aged 67 years, 9 months, and 23 days. On Wednesday, the 18th of December, attended by military honours and the ceremonies of religion, his body was deposited in the family vault at Mount Vernon.

The ancient family vault, in which his dust first reposed, was situated under the shade of a little grove of forest-trees, a short distance from the mansion-house at Mount Vernon, and near the brow of the precipitous bank of the Potomack.

Small and unadorned, this humble sepulchre stood in a most romantick and picturesque spot, and could be distinctly seen by travellers, as they passed in steam-boats up and down the river.

Within eighteen months, the ashes of the father of his country, have been removed from that place, now designated by a white picket fence, to one near the corner of a beautiful enclosure where the river is concealed from view. This site was selected by him during life, for a tomb; and here are now deposited the remains of that great man, who rendered to the American republick the most important civil and military services it ever received. It is arched over, and, with the ground about it, covered with grass and shrubbery. A few trees of cedar are scattered around it; but they do not afford much shade, many of their branches have been cut off by visiters, and taken away as mementoes. The front of the cemetery is constructed of brick, and has a plain iron door of the usual size. In the wall over the entrance, is a small slab of white marble, with these two words inscribed upon it: "Washington Family." Below, is another stone, containing the following brief passage from the Scriptures: "*I am the resurrection and the life; he that believeth on me, though he were dead, yet shall he live.*" Such is the simple tomb of Washington: no other monument marks his grave.

ON LEAVING NEW YORK.—Greeley.

I.

She fades from my vision, the Queen of the West,
  In the gloom of a cloud-mantled even;
And the stars which should spangle the calm river's breast
  Now light but their own native heaven.
I may view them no more from Manhattan's bright shore,
  As they gleam on her own noble bay;
Still Care is behind me—Affection before—
    Then light be our parting!—away!

II.

Fair City of Commerce! my home and my pride!
  My hopes are entwined with thee yet;
And though from thee this moment I blissfully glide,
  I should leave thee for aye with regret;
I shall glad me full oft with a dream of thy spires,
  As o'er mountain and valley I stray—
And return thee my heart when its furlough expires:
    So light be our parting!—away!

III.

Thus ever with me, as Life's pathway I tread,
  And joys with years silently fleet,
I mourn not the Past—I deplore but the Dead—
  While the Future with transport I greet;
Friends fade from my sight—they are still with my heart—
  We may meet on some happier day—
It were nothing to meet if we feared not to part:
    So light be our parting!—away!

LONGEVITY.

Notwithstanding all that has been written on this subject, it may fairly be affirmed, that nothing has yet been done towards making the slightest approach to a real rationale of the causes which are productive of length of years. Shallow empiricks, in evil abundance, have laid down their infallible rules for the preservation of health, and for the promulgation of life to an extreme old age; and, having sold their nostrums or their books, and pocketed the money of their dupes, have afforded the best evidence of their utter ignorance upon the subject, by failing, in their own especial persons, to reach even the average number of years of human existence.

What most strongly and strikingly shows the folly of laying down systematick rules for the promulgation of life to an old age is this, that among the persons who are recorded to have attained to the greatest term of years, have been people of all the varieties of rank, employment, and circumstances. If we insist upon invariable temperance as an indispensable requisite towards the attainment of fulness of years, we are at once met by the fact that Thomas Parr, who lived above a century and a half, had been in early life, any thing but an abstemious or even temperate man; and that Lewis Cornaro, who died at 100 years of age, had reached the half of those years before he ceased to be guilty of such gross gluttony and irregularity, that his physicians anticipated his almost instant decease. But this objection we shall show to be rather specious than solid. If we insist upon comfort, regularity, and nourishing through plain diet, truth plucks us by the sleeve and reminds us that Parr, and Jenkins whose age was 170 years save one, depended for their support upon the charity which they had to encounter all weathers to solicit, and which was not always accorded to their solicitation. Has climate any specifick and infallible influence in the matter? In extreme cases it undoubtedly has; Sierra Leone has no nonagenarians even to speak of, and the coast of Devonshire and the sweet vales of Montpelier, are undoubtedly possessed of both the air and the soil which are more congenial to the human frame than the marshes of Missolonghi, or the simoom-swept deserts of the East. But if any one feel inclined to go beyond this, and to say that in this or in that place the specifick climate is to be found in which man will infallibly inhale the principle of long life, let him only just cast his eye over the subjoined table: let him observe the diversity of climates in which the long livers there named have existed:—

NAME.	AGE.	PLACE.
Albuma Marc - - - -	150	Ethiopia.
Titus Fullonius - - -	150	Benonia.
Abraham Paiba - - -	142	South Carolina.
Dumitur Raduly - - -	140	Transylvania.
Countess Desmond - -	140	Ireland.
James Sand - - - -	140	Staffordshire.
Wife of ditto - - - -	120	Ditto.
Henry Jenkins - - -	169	Yorkshire.
Thomas Parr - - - -	152	Shropshire.
Francis Bons - - - -	121	France.
A. Goldsmith - - - -	142	Ditto.
Margaret Patten - - -	138	Scotland.
William Ellis - - - -	130	Liverpool.
Christian Drakenberg -	146	Norway.
Richard Lloyd - - -	133	Wales.
James Hayley - - - -	112	Cheshire.
John Wilson - - - -	116	Suffolk.
Lewis Cornaro - - -	100	Venice.
Jane Reeve - - - - -	103	Essex.
Marquis of Winchester. -	106	Hampshire.
Agnes Milburne - - -	116	London.
Joice Heth - - - - -	162	Kentucky.

A mere glance at this table—and we could have greatly extended it—will show more clearly than any argument, that climate has no specific or infallible influence upon the duration of life, excepting in extreme cases; for, excepting the extremes, there is included in the table of places almost every variety of soil and climate. Venice, built literally in the water, the mild warmth of France, the fierce and biting blasts of Norway, have alike permitted longevity. Jane Reeve lived to 103 in the marshy county of Essex, and Hippocrates, the great physician, lived but to 104 in the delicious island of Cos; Albuma Marc reached 150 in sultry Ethiopia, and Christian Drakenberg reached to within four years of that age in steril and chilly Norway.

Such contrasts seem to bid defiance to all efforts at philosophizing upon the subject. But thus much may be assumed for certain, that every temporary shock which health receives does somewhat to impair the durability of the human frame; and that, consequently, as it is obvious that every act of intemperance causes a temporary derangement of health, we ought not to be tempted to intemperance because some intemperate men have attained to length of days; but to remember that—even were not our morality concerned, as it evidently and importantly is, in our observance of the virtue of temperance—they lived long not *on account* of their intemperance, but notwithstanding it, and that they might, and most probably would, have lived much longer, had they not been guilty of the excesses they committed.

The issues of life and death, it must be remembered, are primarily in the hands of God; but he has given us a free will to choose between secondary causes; and there is no doubt that whatever circumstances or climate we may be placed in, *temperance in all things*, is, as to health, longevity, and virtue, a very indispensable requisite.

Perhaps we cannot more agreeably conclude this brief notice of the subject than by quoting, from a clever contemporary, the reply of an Italian, who, being asked in his 116th year, the means by which he had attained to so advanced an age, replied, with the ready versification for which the Italians are so remarkable:—

> "Con mangiar brocoli,
> Portar a i pedi zocooli;
> In tetto capello,
> Pochi pensieri in cervello."

Signifying if our free translation may be pardoned:—

> "When hungry, of the best I eat,
> And dry and warm I keep my feet;
> I screen my head from sun and rain,
> And let few cares perplex my brain."

Nor is the latter part of this improvisatized recipe either so unimportant or so difficult as but too many persons may be inclined to think it. For scarcely any thing conduces more to health of body than calmness and serenity of mind; and of all the storms which devastate the human mind, alas! how large a majority are the consequences of human wickedness and human perversity! how few inevitable or unameliorable.

EXTRAORDINARY INDIAN FEATS OF LEGERDEMAIN.

From the Manuscripts of D. D. Mitchell, Esq.

I have felt some reluctance in narrating the following singular feats, (I had almost said miracles,) which I saw performed among the Arickara Indians, not because I consider them unworthy the attention of the curious, but lest I should be accused of sporting with the reader's credulity, or of availing myself too largely of what is supposed by some to be the *traveller's privilege*. I acknowledge that the performance was altogether above my comprehension, and greatly excited my astonishment.

In civilized life, we know the many expedients to which men resort in order to acquire a subsistence, and are not therefore surprised, that by perseverance and long practice, stimulated by necessity they should attain great dexterity in the art of deception. To find it, however, carried to such great perfection by wild and untutored savages, who are neither urged by necessity, nor indeed receive the slightest reward for their skill, is certainly very surprising.

In travelling up the Missouri during the summer of 1831, we lost our horses near the Arickara village, which caused our detention for several days. As this nation has committed more outrages upon the whites than any other on the Missouri, and seem to possess all the vices of the savage without a redeeming virtue, we found ourselves very unpleasantly situated near the principal village, without sufficient force to repel an attack if one should be made. After some deliberation we adopted the advice of an old Canadian hunter, and determined to move our chattels directly into the village, and, whilst we remained, to take up our lodgings with the tribe. We were emboldened to this step, by the assurance of the hunter, that the Arickarees had never been known to kill but one man who had taken refuge within the limits of their town, and that their forbearance originated in the superstitious belief that the ghost of the murdered had haunted their encampment, and had frightened away the buffalo by his nightly screams.

We were received in the village with much more politeness than we expected; a lodge was appropriated to our use, and provisions were brought to us in abundance.—After we were completely refreshed, a young man came to our lodge, and informed us that a band of bears, (as he expressed it,) or medicine men, were making preparations to exhibit their skill, and that if we felt disposed we could witness the ceremony. We were much gratified at the invitation, as we had all heard marvellous stories of the wonderful feats performed by the Indian medicine men or jugglers. We accordingly followed our guide to the medicine lodge, where we found six men dressed in bear-skins, and seated in a circle in the middle of the apartment. The spectators were standing around, and so arranged as to give each individual a view of the performers. They civilly made way for our party, and placed us so near the circle that we had ample opportunity of detecting the imposture, if any imposition should be practised. The actors (if I may so call them) were painted in the most grotesque manner imaginable, blending so completely the ludicrous and frightful in their appearance, that the spectators might be said to be somewhat undecided whether to laugh or to shudder. After sitting for some time in a kind of mournful silence, one of the jugglers desired a youth who was near him, to bring some stiff clay from a certain place which he named on the river bank. This we understood, through an old Canadian named *Garrow*, (well known on the Missouri,) who was present and acted as our interpreter. The young man soon returned with the clay, and each of these human bears, immediately commenced the process of moulding a number of little images exactly resembling buffaloes, men and horses, bows, arrows, &c. When they had completed nine of each variety, the miniature buffaloes were all placed together in a line, and the little clay hunters mounted on their horses, and holding their bows and arrows in their hands, were stationed about three feet from them in a parallel line. I must confess that at this part of the ceremony I felt very much inclined to be merry, especially when I observed what appeared to me the ludicrous solemnity with which it was performed. But my ridicule was changed into astonishment, and even into *awe*, by what speedily followed.

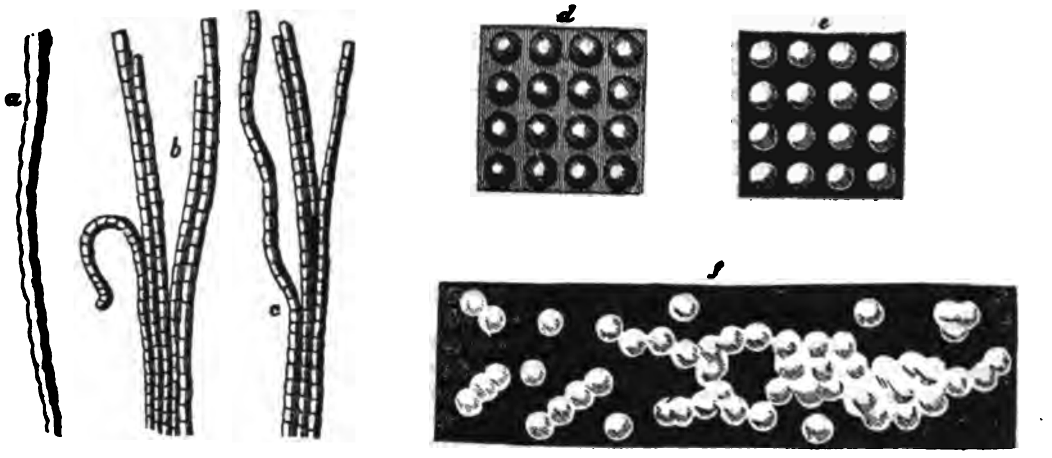
When the buffaloes and horsemen were properly arranged, one of the jugglers thus addressed the little clay men, or hunters:—

"My children, I know you are hungry; it has been a long time since you have been out hunting. Exert yourselves to-day. Try and kill as many as you can. Here are white people present who will laugh at you if you don't kill. Go! don't you see that the buffaloes have already got the scent of you and have started?"

Conceive, if possible, our amazement, when the speaker's last words escaped his lips, at seeing the little images start off at full speed, followed by the Lilliputian horsemen, who, with their bows of clay and arrows of straw, actually pierced the sides of the flying buffaloes at the distance of three feet. Several of the little animals soon fell, apparently dead,—but two of them ran round the circumference of the circles, (a distance of fifteen or twenty feet,) and before they finally fell, one had three and the other had five arrows transfixed in his side. When the buffaloes were all dead, the man who first addressed the hunters spoke to them again, and ordered them to ride into the fire, (a small one having been previously kindled in the centre of the apartment,) and on receiving this cruel order, the gallant horsemen, without exhibiting the least symptoms of fear or reluctance, rode forward at a brisk trot until they had reached the fire. The riders now commenced beating their horses with their bows, and soon succeeded in urging them into the flames, where horses and riders both tumbled down, and for a time lay baking on the coals. The medicine men gathered up the dead buffaloes, and laid them also on the fire, and when all were completely dried they were taken out and pounded into dust. After a long speech from one of the party, (of which our interpreter could make nothing,) the dust was carried to the top of the lodge and scattered to the winds.

I paid the strictest attention to the whole ceremony, in order to discover, if possible, the mode by which this extraordinary deception was practised: but all my vigilance was of no avail. The jugglers themselves sat motionless during the performance, and the nearest was not within six feet. I failed altogether to detect the mysterious agency by which inanimate images of clay were to all appearance suddenly endowed with the action, energy and feeling of living beings

CONSTITUENT PROPERTIES OF THE BLOOD.



a, Simple fibre of a muscle magnified 400 diameters; *b*, *c*, ditto, 200 diameters; *d*, sixteen coloured globules of the blood magnified 400 diameters; *e*, the same globules deprived of their red envelope; *f*, colourless globules coalescing together and forming, as is conjectured, the elementary fibre of muscle.

"No sons of wisdom could this current trace,
Or of th' Ionick, or Italick race :
From thee, Democritus, it lay conceal'd,
Though yielding Nature much to thee reveal'd.
Though with the curious knife thou didst invade
Her dark recesses, and hast oft display'd
The crimson mazes, and the hollow road,
Which to the heart conveys the refluent *blood*.
It was to thee, great Stagyrite,[*] unknown,
And thy preceptor of divine renown.
Learning did ne'er this secret truth impart
To the Greek masters of the healing art.
'Twas by the Coan's piercing eye unview'd,
And did attentive Galen's search elude."

Blackmore's Creation.

Among the very many interesting inquiries made in natural philosophy in modern times, the circulation and constituent properties of the blood would appear to have excited more attention than any other subject; as upon a correct knowledge of these depends the understanding of the economy of the organick life of man.

To the microscope we are chiefly indebted for a development of those appearances and properties of the blood, which go far to explain its formation and use; and of these we shall therefore treat, referring our readers to the engraving for ocular explanation.

Man is composed of elementary substances, variously disposed and modified by the vital principle. During life these substances are continually supplied and exhausted; and becoming useless, are carried by appropriate vessels from the system. The grand depository of them is the blood, which, circulating through every part of the body, supplies new and energetick particles, as fast as the others are exhausted. The processes by which this apparently simple operation is performed are numerous and complex, the substances required to be secreted differing so greatly from one another. From the blood the most tender and delicate membranes, equally with the hardest bone, are constructed. The tear which illumes, rather than bedims the eye of pity; the wax that defends the ear; milk—the food of infancy; the colouring matter of the eye; the saliva of the mouth; the hair of the head; the enamel of the teeth; the pliant skin; the active muscle; and the irresistible acid of the stomach—these, and all the organs of the body, are formed from blood. But, what is more wonderful, blood is *alive;* it appears to possess a distinct elementary vitality, and is the medium through which the stimulus of life is given to the nervous, muscular, and other systems. It is deserving of impressive remark, that the vitality of the blood, the ocular discovery of which is only of modern date, was revealed by God to Noah and his sons in these words.—"Flesh, with the *life* thereof, *which is the blood* thereof, shall ye not eat;" and again Moses, in his delivery of the laws of God, commanding the same thing, says, in Leviticus, "*the life of all flesh is the blood thereof;*" and also in Deuteronomy, "*the blood is the life.*"

Blood is composed of several substances, combined and held in a state of fluidity by the vital principle, and which are known by the names of *crassamentum*, consisting of *fibrin* and *red particles; serum*, composed of *albumen* and a watery fluid called the *serosity*, together with several earthy and saline substances; and the *halitus*, or vapour which arises during coagulation, a process which, in our history of these several substances, we shall presently describe.

When blood is first drawn from the body it appears to be a thick, gluy, homogenous fluid, and of a temperature much warmer than the average heat of the atmosphere. It does not however continue in this state long, for as it cools, a fetid vapour arises with its departing heat, which is the *halitus* before mentioned. During the escape of this vapour a highly interesting change commences in the structure of the blood, and which continues till it is changed into two substances, a solid and a fluid. This process is called *coagulation;* the solid produced by it, *crassamentum;* and the fluid, *serum*.

After a short time, the crassamentum separates, as the blood itself had done, into different substances, the one, of a dull white, and the other of a red colour. The first of these is a soft, elastick, fibrous matter, known by the several names of *gluten*, *coagulable lymph*, or most commonly, *fibrin*. The second, consists of countless numbers of minute globules, of a red colour, and are called the *red particles*.

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[*] Aristotle.

The fibrin is the material from which all the solids of the body are formed; and next to the red particles is the most important part of the blood.

In the blood of many of the lower animals, our knowledge of these minute bodies is solely due to the microscope; before it was invented they were totally unknown. In the human blood they appear to be of a globular shape; and consist of an external red envelope, or skin, and an internal colourless substance, round which the coloured skin is closely wrapped. (*See engraving.*) They exist in numbers which exceed all calculation. Leenwenhock and Dr. Jurin, who long and anxiously examined them, and who were the first in discovering them, have computed the diameter of a single globule of human blood, to be the one thousand, nine hundred and fortieth part of an inch; from which it follows, that a ball of an inch in diameter would be equal to seven thousand, three hundred and one millions, three hundred and eighty-four thousand such globules. Marvellous as this appears, succeeding observers, of the highest credit, have even made the numbers greater. Prevost, Dumas, Wollaston, Bauer, and Kater, have nearly doubled the amount.

The present and most universal opinion concerning these particles is, as we have before observed, that they constitute the very essence of the blood, and, influenced by various chymical and other affinities, form all the animal textures. The formation of muscle from them may be almost seen, for the ultimate fibre of a muscle is nothing more than a number of apparent globules (*see engraving*), arranged in a connected series, similar to those in the blood. The manner in which these red particles are formed, is wrapped in impenetrable mystery.

We trace the food through the stomach into the intestines, its multifarious ingredients changed into a milky fluid, and in this we discover globules; but they are without colour. We therefore follow them in their passage through the great absorbing vessels, till we see them discharged into the current of the blood, and thence to the lungs, where, coming into contact with the oxygen of the air, they at once become red, and constitute arterial or living blood. All this we can see, but no farther.

The *serum*, which next demands our attention, is the fluid in which, after coagulation, the crassamentum floats. It is light coloured and viscid; and with a heat of 160° may be converted into a substance exactly like the white of an egg, which, in its chymical constituents, it closely resembles. It holds many substances in solution; of these the principal are, muriate of soda, combined with minute portions of muriate of potash, subcarbonate of soda, sulphate of potash, and phosphate of lime, iron, and magnesia. Sulphur, and a quantity of uncombined alkali, also exist in it. The probable use of the serum is to circulate the fibrin, and those substances which run through the body for the perpetual maintenance of the ever-exhausting system. It is remarked that "the proportion of the serum to the crassamentum differs exceedingly in different animals, and in the same animals at different times. It appears to have a close relation to the strength and ferocity, or the meekness and gentleness of the animal, being, for example, much smaller in quantity, in all the carnivora, than in the sheep, the hare, and the timid animals."

The *serosity* of the blood, which is the last constituent we shall have to mention, is that fluid which in roasted meats is popularly termed "gravy." It is drained from the *serum* in a coagulated state; its use in the system is to supply the watery secretions, such as tears, saliva, &c.

The specifick gravity of blood, taking water at 1000 is, at an average, about 1,070. Venous is heavier than arterial blood.

The temperature of the blood varies according to the nature of different animals: hence some are emphatically called cold-blooded. In birds it is very high. In man it is usually at about 98°, and higher or lower as disease influences the system.

The blood is endowed with an extraordinary power of maintaining, for a long time, the equality of its temperature undisturbed by the elevating or depressing influences of surrounding heat or cold. The human blood possesses this power in a degree superiour to that of all other creatures; and hence, in regions where the bear falls into a state of deathlike torpor, man pursues his customary industry, and in the scorching plains of the great red desert, where even the lion retreats, exhausted from the consuming heat of the torrid zone, we see a Parke, a Denham, or a Lander, steadily maintaining an equanimity of temperature, and fearlessly pursuing their enterprising researches.

SAILING DOWN THE OHIO.

BY AUDUBON.

The natural features of North America are not less remarkable than the moral character of her inhabitants; and I cannot find a better subject than one of those magnificent rivers that roll the collected waters of her extensive territories to the ocean.

When my wife, my eldest son (then an infant), and myself, were returning from Pennsylvania to Kentucky, we found it expedient, the waters being unusually low, to provide ourselves with a *skiff*, to enable us to proceed to our abode at Henderson. I purchased a large, commodious, and light boat of that denomination. We procured a mattress, and our friends furnished us with ready-prepared viands We had two stout negro rowers, and in this trim we left the village of Shippingport, in expectation of reaching the place of our destination in a very few days.

It was in the month of October. The autumnal teints already decorated the shores of that queen of rivers, the Ohio. Every tree was hung with long and flowing festoons of different species of vines, many loaded with clustered fruits of varied brilliancy, their rich bronzed carmine mingling beautifully with the yellow foliage, which now predominated over the yet green leaves reflecting more lively teints from the clear stream than ever landscape painter portrayed or poet imagined.

The days were yet warm. The sun had assumed the rich and glowing hue which at that season produces the singular phenomenon called there the "Indian summer." The moon had rather passed the meridian of her grandeur. We glided down the river, meeting no other ripple of the water than that formed by the propulsion of our boat. Leisurely we moved along, gazing all day on the grandeur and beauty of the wild scenery around us.

Now and then a large cat-fish rose to the surface of the water in pursuit of a shoal of fry, which, starting simultaneously from the liquid element, like so many silvery arrows, produced a shower of light, while the pursuer with open jaws seized the stragglers, and with a splash of his tail, disappeared from our view. Other fishes we heard uttering beneath our bark a rumbling noise, the strange sounds of which we discovered to proceed from the white perch, for on casting our net from the bow, we caught several of that species, when the noise ceased for a time.

Nature, in her varied arrangements, seems to have felt a partiality towards this portion of our country. As the traveller ascends or descends the Ohio, he cannot help remarking, that, alternately, nearly the whole length of the river, the margin, on one side, is bounded by lofty hills and a rolling surface; while, on the other, extensive plains of the richest alluvial land are seen as far as the eye can command the view. Islands of varied size and form rise here and there from the bosom of the water, and the winding course of the stream frequently brings you to places where the idea of being on a river of great length changes to that of floating on a lake of moderate extent. Some of these islands are of considerable size and value; while others, small and insignificant, seem as if intended for contrast, and as serving to enhance the general interest of the scenery. These little islands are frequently overflowed during great *freshets* or floods, and receive at their heads prodigious heaps of drifted timber. We foresaw with great concern the alterations that cultivation would soon produce along those delightful banks.

As night came, sinking in darkness the broader portions of the river, our minds became affected by strong emotions, and wandered far beyond the present moments. The tinkling of bells told us that the cattle which bore them were gently roving from valley to valley in search of food, or returning to their distant homes. The hooting of the great owl, or the muffled noise of its wings as it sailed smoothly over the stream, were matters of interest to us; so was the sound of the boatman's horn, as it came winding more and more softly from afar. When daylight returned, many songsters burst forth with echoing notes, more and more mellow to the listening ear. Here and there the lonely cabin of a squatter met the eye, giving note of commencing civilization. The crossing of the stream by a deer foretold how soon the hills would be covered with snow.

Many sluggish flat-boats we overtook and passed —some laden with produce from the different head-waters of the small rivers that pour their tributary streams into the Ohio; others, of less dimensions, crowded with emigrants from distant parts, in search of a new home. Purer pleasures I never felt; nor have you, reader, I ween, unless indeed you have felt the like, and in such company.

The margins of the shores and of the rivers were at this season amply supplied with game. A wild turkey, a grouse, or a blue-winged teal, could be procured in a few moments; and we fared well, for whenever we pleased, we landed, struck up a fire, and provided as we were with the necessary utensils, procured a good repast.

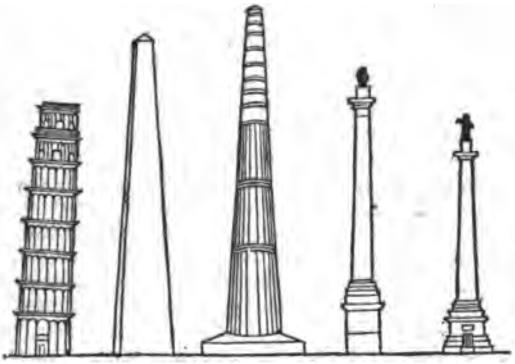
Several of these happy days passed, and we neared our home, when, one evening, not far from Pigeon Creek (a small stream which runs into the Ohio, from the state of Indiana), a loud and strange noise was heard, so like the yells of Indian warfare, that we pulled at our oars, and made for the opposite side as fast as possible. The sounds increased; we imagined we heard cries of "murder;" and as we knew that some depredations had lately been committed in the country by dissatisfied parties of aborigines, we felt for a while extremely uncomfortable. Ere long, however, our minds became more calmed, and we plainly discovered that the singular uproar was produced by an enthusiastick set of Methodists, who had wandered thus far out of the common way, for the purpose of holding one of their annual camp-meetings, under the shade of a beech forest. Without meeting with any other interruption, we reached Henderson, distant from Shippingport by water about two hundred miles.

When I think of these times, and call back to my mind the grandeur and beauty of those almost uninhabited shores; when I picture to myself the dense and lofty summits of the forest, that everywhere spread along the hills, and overhung the margins of the stream, unmolested by the axe of the settler; when I know how dearly purchased the safe navigation of that river has been by the blood of many worthy Virginians; when I see that no longer any aborigines are to be found there, and that the vast herds of elks, deer and buffaloes, which once pastured on these hills and in these valleys, making for themselves great roads to the several salt springs, have ceased to exist; when I reflect that all this grand portion of our Union, instead of being in a state of nature, is now more or less covered with villages, farms, and towns, where the din of hammers and machinery is constantly heard; that the woods are fast disappearing under the axe by day, and the fire by night; that hundreds of steam-boats are gliding to and fro, over the whole length of the majestick river, forcing commerce to take root and to prosper at every spot— when I see the surplus population of Europe coming to assist in the destruction of the forest, and transplanting civilization into its dark recesses— when I remember that these extraordinary changes which have all taken place in the short period of twenty years, I pause, wonder, and although I know all to be the fact, can scarcely believe its reality.

COMPARATIVE HEIGHT OF MONUMENTS.

Pyramids are known as the colossal structures of the ancient Egyptians. The cause of their erection is unknown. Some maintain that they were consecrated to the sun; others, that they served as a kind of gnomon for astronomical observations; according to Diderot, for the preservation and transmission of historical information; according to others, and this was the prevailing opinion among the ancients, that they were designed as sepulchres, or chambers for mummies. Among the most renowned are those of Cheops and Cephrenes; in building the former, 100, 000 men were employed 20 years. Suppose the wages of the labourers were but a penny a day, yet the labour alone upon that pyramid would equal seven millions three hundred thousand dollars. There have been various statements in relation to the size of these immense structures. Herodotus gives 800 feet as the height of the largest one, and says that this also is the length of its base on each side. Strabo makes it 625, Diodorus, 600 feet. The French ascertained it to be 480 feet wide. The largest was built by Cheops and is supposed to contain the bones of that king.

The Egyptian Pyramids are quadrangular and hollow, having a broad base, contracting gradually towards the top, sometimes terminating in a point, sometimes in a plain surface. They are built of large though not very hard limestone. There are about forty of them all; these are included within the space of a few miles in the vicinity of Memphis. The group near Gizeh, is the most remarkable.



The outlines of the highest of these pyramids are given in the cut; this one is about five hundred feet high. In the centre, and next in height, is the Mausoleum near Delhi, in Hindostan, which rises two hundred and forty-two feet. Bunker Hill monument is next in height, and is intended to be two hundred and twenty feet. London monument, erected in commemoration of the celebrated gunpowder plot projected to blow up the house of parliament, is next as to height, and reaches two hundred and two feet. The leaning tower, at Pisa, in Tuscany, Italy, is the next highest of the group, and is of very great antiquity. Authorities differ as to its precise height, though it is probably about two hundred feet. Its inclination is fourteen feet from a perpendicular. It is of a cylindrical form, and consists of eight circles of columns, supporting arches, which are smaller and more numerous as you ascend. The proportions are considered very graceful. Trajan's column, at Rome, is the lowest of the group, and is one hundred and forty feet high. It was erected in honour of Trajan, one of the most worthy of the Roman emperours, to commemorate his victories over the enemies of the empire. He reigned in A. D. 90, and was a correspondent of Pliny. The column is easily ascended by a winding staircase of Parian marble. The height of the Washington monument at Baltimore, is one hundred and fifty three feet.

How small a portion of our life it is that we really enjoy. In youth, we are looking forward to things that are to come; in old age, we are looking backwards to things that are gone past; in manhood, although we appear indeed to be more occupied in things that are present, yet even that is too often absorbed in vague determinations to be vastly happy on some future day, when we have time.—*Lacon.*

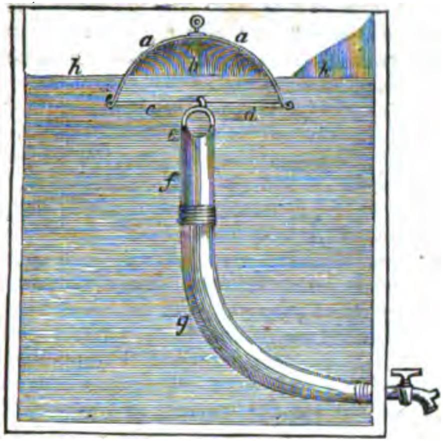
MEMORY.

There is an isle! where ling'ring plays
The sunlight of those earlier days,
When o'er the soul's most sadden'd feeling
Some joyous future would be stealing,
And every passing moment brought
Some rapt'rous sense—some glowing thought—
Effacing that which went before,
Like waves upon the moonlight shore,
Which come and die—so quick—so bright—
That to the wilder'd brain the sight
Conveys th' idea, from this its seeming,
'Tis but the same wild wave thus beaming.
The breeze may blow, the waves may roll,
That isle is centred in the soul!
Nor tempest's chill can ever tear
The flowers which bloom for ever there.
'Tis Memory!

Moments there are!—when we must brood
O'er broken vows in solitude;
Then, who does not delight to turn
A tearful eye to Friendship's urn!
As, through the shades of Time, he traces
Those long-beloved 'familiar faces,'
Whose fond affections used to cast
A radiant halo o'er the past.
And there are hours! when earth and sky
Whisper the sad heart mournfully;
When cheerless as the winter's snow
Were life, did not that light still glow.
For, as upon the crumbling pile
The moonbeams rest with sadd'ning smile—
So, gently on the heart's decay
Will shine the pure and quiet ray
Of Memory!

The feeling tear! that crystal gem
Set in the warm heart's diadem,
Were but a cold, a senseless thing,
Did it not sparkle from the spring
Of Memory. And, dark the mind!
The senses dull! the soul confined!
Did deep Oblivion's stream surround
That little consecrated ground.
What feelings were there, then to bind
Our social hearts to human kind?
For who would idly seek to cherish
Joys that he knows must surely perish?
Like those, whose life, as many deem,
Depends upon the sunny beam,
Yet die when in their beam you've laid them,
Destroyed by the same beam that made them.
So would our joyous hours depart,
And leave no incense on the heart—
No Memory.

If there's a musick can control
The softer breathings of the soul—
Whose magick chords have power to bare
The mysteries recorded there;
It is the deep—the moral tone,
Which springs from Memory's Harp alone,
When, mingling with its solemn lays,
Are voices heard of bygone days.
As o'er the cold and icy lake
The winds of Spring their pinions shake—
Making that chilly depth to soften,
Where they have dipp'd their wings so often;
So will the heart again expand,
Touched by that sweet song from the Land
Of Memory.



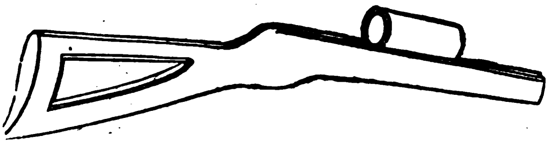
APPARATUS FOR DRAWING OFF WATER.

Mr. George Henekey, has invented an apparatus for drawing off water, and other liquors, from the surface.

Water is generally drawn off from a tank or reservoir, by a cock near the bottom of one of the sides. The consequence of this is, that if part of the water be turbid, as it occupies the lower part of the reservoir, it is sure to be drawn out for use before the clear water, which lies above it.

In the accompanying figure, *g* is a flexible hose, descending to the bottom of the reservoir, and there united with the discharge cock, thereby allowing no water to pass through this latter but what comes from the hose: *f*, is a short open pipe of thin copper, tied to the upper end of the hose: *e*, is a union joint, by means of which the hose is suspended to the cross bar, *c d*, of the float: *a a*, is the float, consisting of a hemispherical cap of sheet copper, the upper part of which, *b*, is an air-tight cavity, sufficient to buoy up both the cap and the hose. The margin of the cap is a little below the surface, *h h*, of the water in which it floats, so as to prevent any dust or floating particles getting access to the mouth of the hose. By this arrangement it is manifest, the water is at all times drawn off near its surface.

Mr. Henekey imagines that the same contrivance might probably be adopted with advantage in the management of various other fluids, such as oil, of which the lighter and clearer part is more valuable than the dregs, and which are generally separated by putting the fluid into a cistern with cocks at different heights for the purpose of drawing off the upper part in proportion as it becomes clear. The ingenious inventor has applied his apparatus to a water-tank with very satisfactory results.



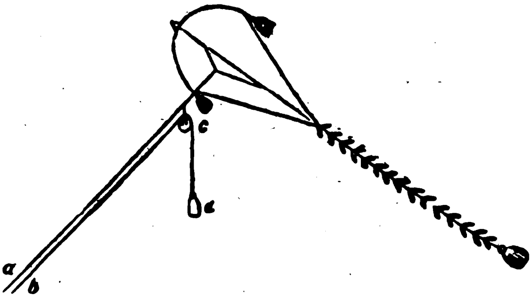
TELESCOPE HOLDER.

Captain Lord John Hay, R. N. has lately invented a telescope holder, to enable a naval officer, like himself, who has had the misfortune to lose an arm, to take a steady hold of a telescope of the size of those in general use on board ship.

The invention consists of a stock, as shown in the annexed figure, similar to that of a musket, but made of a light wood, and cut out hollow near the butt for the purpose of still farther reducing the weight.

On the upper part is a broad ring fastened with a pin. The telescope is put through this ring, and lies in the groove of the stock, being kept from slipping by the elasticity of the lining of the ring, which consists of a piece of list wrapped round it.

With the butt resting against the shoulder, and the hand applied beneath the ring as a support, the telescope may be held at least as firmly as by both hands in the usual way; and even those who have not lost an arm will find an advantage in the use of this holder, if their hands are affected with any material degree of tremour.



METHOD OF COMMUNICATING FROM A STRANDED SHIP WITH THE SHORE.

A number of ingenious persons have devised plans for carrying a line from a ship to the shore, and several curious contrivances have been made for causing the kite to drop to the ground when it has reached it. Mr. Ward, an English gentleman much interested in mechanical pursuits, has proposed the following method, wherein the kite only is used as the means of suspending and conveying a second line, and therefore admits of several trials being made with it, in case the former ones should have failed of success.

At some feet below the kite, Mr. Ward attaches to its string a loop, from the end of which a pulley, *c*, is suspended. Over this pulley is hung a second string, with a weight, *d*, fastened to it, the other end, *b*, of the string being on board the ship. When the kite has been drifted by the wind over the land, no more line is given out, and the kite becomes a stationary point, from which the weight attached to the end of the line *b* is allowed to drop, and thus to form a communication between the ship and shore. The kite must be constructed large enough to carry, without difficulty, both the lines and the weight *d*; and this latter must be sufficient to overpower the weight of the line *b*, as well as the friction of the pulley *c*. Indeed, if the distance between the ship and the shore be considerable, such as four or five hundred yards, it will be prudent to give out the line *b* somewhat quicker than the line *a*, so as to keep a decided excess of weight on the land side of the pulley *c*. To prevent the line *b* from swagging, Mr. Ward recommends to attach to the kite line, two or three light metallick rings, and pass the weight line through them: this, however, would render the apparatus somewhat more complicated, and would increase the friction.

Although in the accompanying diagram the pulley is represented as almost close to the kite line, it is to be understood that, in practice, the distance between the two must be considerably increased. In an experiment made by the inventor, with a kite containing 3⅜ feet surface, and the weight, or bag *d*, weighing 4½ ounces, the kite was found to fly best, when the line by which the pulley was suspended was ten yards long. The weight was raised and lowered by means of the line *b*, without any difficulty, and without the least tendency in the two lines to get foul of each other, or in the pulley to twist or become oblique.

WINTER.

"This is the eldest of the seasons; he
Moves not like spring with gradual steps, nor grows
From bud to beauty, but, with all his snows,
Comes down at once in hoar antiquity."

"Now comes the season when the humble want,
And know the misery of their wretched scant:
Go ye, and seek their homes, who have the power,
And ease the sorrows of their trying hour."—Anon.

Thus do, and enjoy the bright reward which conscience and the secret pleasure of well-doing will infallibly afford. When the hoary winter hath bound fast the ground, and the wretchedness of the inclement season visiteth the poor and humble, and the churlish frost and the bitter storms prevent the labour of the industrious man, and deprive his dependant family of their accustomed pittance; then be ye, with whom the ability dwells, still found in the habitations of poverty, dispensing a portion of your plentiful substance among the poor ones of the world. The blessing of the lowly, the cry of gratitude, and the consolation of the righteous heart and the applauding conscience, shall abundantly sanctify your charitable doings; and ye may well be assured, that—

"There is that scattereth, and yet increaseth;
To him who gives, a blessing never ceaseth."

The winter season is supposed to commence about the second week in December, and to comprise the remainder of that month, the whole of January and February, and part of March. Its indications are many, and visible. The sun gradually absents itself from us, and every thing becomes changed. The beautiful fruitfulness of the earth gives place to barren poverty and cheerlessness of appearance. The loveliness of the blossoming fruit-trees and shrubs, the variegated verdure of the meads and woods, the golden harvest fields, the umbrageous foliage of the trees,—in short, all the charms of spring, and the glories of summer, and the sober radiance of autumn, have all vanished from our sight,—instead of which, one monotonous dreariness pervades the face of nature, and every thing beyond our firesides or our threshold looks sombre and repulsive.

One of the earliest forerunners of winter is the universal fall of the leaf. The proud monarchs of the forest, the humble plants of the garden, and the lowly hedge bushes, all descriptions indeed of fructifying nature, lose their leafy ornaments, as the cold season approaches, with but few exceptions. Soon as the chilly frost or the cold dews invade them, the vegetables are stripped of their honours, because the cold stagnates the sap which nourishes them; yet this cannot be the sole cause; for even in greenhouses where they are sheltered from the weather, the leaves will still fall when the proper season arrives. And even in this particular, the providence of God is eminently conspicuous. He has wisely ordained that nothing in this earth should be wasted, but that all its component parts should be active in producing and reproducing the necessaries of our subsistence and use. Therefore when, to our weak judgments, it would seem that the vegetable productions of nature have served their extreme purpose, and that their remnants can be of no further use, and must perish for ever; yet, even then, they possess an active property, and in returning to the dust, they afford nourishment to other similar formations. So it is with the dead leaves—they fall, wither, and rot; and when rotten, they become excellent manure for the ground, and thus diffuse a vivifying essence for future plants, and for fresh leaves in due season. And this is the secret process of Nature. Every thing becomes useful; all her parts perform repeatedly the same offices; we consume, and are consumed, and nothing is lost; because all return to the general mother, *Earth*, and are again employed by her in her ceaseless process. But to return to our seasonable subject. When all nature is thus apparently dreary and desolate, the days are too short and inclement to admit of much enjoyment in the open air; yet winter is by no means devoid of natural beauties, and sources of gratification to man. The appearances of the season present much for his contemplative admiration. When the eye is reluctantly opened in the morning, and the warm couch is quitted by its shivering tenant, what a curious spectacle is presented to his view! A rough and whitish film encrusts the windows; icicles of various sizes, brilliant in their transparency, depend from the eaves and window frames, and the frosted glass seems to be graven with figures and landscapes, and various indescribable vagaries of art. The trees, naked and bare, are encased in a glittering cuticle of frost; the lawns and the paths are smoothly spread with a snowy carpet; and the little brooks are hardened into a crystal mass. Every thing is fixed in its frosty beauty, and a cold purity pervades the whole frame and system of Nature. Winter is indeed her season of rest. During the preceding months she has diligently laboured in fulfilling the operations appointed her by the beneficent Creator, and is producing her treasures for the benefit of mankind. The spring has generated, and the summer has matured, and the autumn has yielded to the gatherer, all the genial fruits of the earth; every portion of the past season has added to our comforts and pleasures; the meadows have been clothed with verdure, the trees with blossoms, foliage, and fruit; and the fields have glowed with ripe grain; and now, exhausted by the multiplicity and extent of her exertions, Nature reposes from her toil, and relaxes that she may gather strength for the seasonable repetition of her labours. But her repose is not absolute inactivity; she is still silently and secretly preparing for another spring; the corn, which the industrious farmer has providently deposited in the ground, already germinates; and the fibres of the plants, which are hereafter to luxuriate in, and beautify our meadows and gardens, are beginning to be developed. The advantages of winter are indeed not a few; although it is too common in this season to hear discontented murmurings and useless praises of the past seasons, and spring, summer, and autumn when they are departed, are extravagantly regretted. But these are unjust in the extreme, and proceed from the restless, unsatisfied temper of man, who is too apt to slight the blessings he enjoys, and pine for those he has lost, but which, when present, he did not sufficiently value. So far, indeed, from winter being, as it is falsely supposed, inimical to our health or enjoyment, it possesses considerable advantages, and is, in fact, beneficial to us. The heat of summer and the moisture of autumn, load the air with noxious vapours, which the frost and cold of winter disperse, whereby the air is purified, and the tendency to putrefaction in the atmosphere, and in the humours of the body, which such heated vapours engender, is destroyed, and our health thereby invigorated after the lassitude produced by the warmer seasons. If the evaporations of the earth were always to descend in the form of rain, the soil would become too wet and soft, and the influence of the warm moisture would too much relax our bodies, and increase the corporeal humours. But the cold hardens and invigorates the earth, braces the human body, promotes the due circulation of the blood, and purifies it in its course, whereby the appetite is properly regulated, the spirits cheered, and the whole system healthfully maintained. Let us then never repine at the seeming discomforts of winter, since they are in fact eminently necessary to us, and to all nature—very beneficial to our health, and the cause of our due enjoyment of the pleasures and blessings of life during the other seasons. Every season has its appointed uses and advantages; and we may be well assured that no ordinance of nature is vain, or unnecessary to our welfare.

Winter, too, has its amusements. No rational being need be at a loss to occupy and to enjoy every moment of his valuable, but fleeting time, in every season. The delight and improvement to be derived from books, judiciously selected—the lasting advantages of acquiring knowledge—the pleasure and benefit of social converse, where reason and information furnish an infinite fund of enjoyment—the wonders of science, and the study of nature and of men, together with the charms of many other rational amusements, which cannot here be specified, are surely available, in some degree, and must undoubtedly be most gratifying to every sober mind. For all these pleasures winter affords opportunity; and we doubt not, that by pursuing some of them, or by blending them, young readers will, throughout the wintry season, enjoy a constant source of happiness, and receive abundant advantage.

"Winter! I love thee, for thou com'st to me
Laden with joys congenial to my mind;
Books, that with bards and solitude agree,
And all those virtues which adorn mankind."

"Although the softer beauties of the year
Are fled and gone, kind Heaven has not denied
Our books and studies, musick, conversation,
And evening parties for our recreation;
And these suffice for seasons snatched away,
Till Spring leads forth the slowly length'ning day."

LENGTH OF THE PENDULUM.

The following are some of the difficulties that occur in ascertaining the exact length of the pendulum:—

The various expansion of metals, respecting which scarcely two pyrometers agree; the changeable nature of the atmosphere; the uncertainty as to the true level of the sea; the extreme difficulty of measuring accurately the distance between the point of suspension and the centre of oscillation, and even of finding that centre. Besides these, another source of errour has been lately discovered, which seems to remove all hope of perfect accuracy; viz. the variety of terrestrial attraction, from which cause the motions of the pendulum are also liable to variation, even in the same latitude. In perusing his researches, Captain Kater discovered that the motions of the pendulum are effected by the nature of the strata over which it vibrates.

The length of the second's pendulum may be demonstrated to be exactly in proportion to the force of gravity at the place of observation.

THE CYCLOID.

A Cycloid is the path which any point of a circle, moving along a plane, and round its centre, traces in the air; so that a nail on the felloe of a cart wheel moves in a cycloid, as the cart goes along, and as the wheel itself both turns round its axle, and is carried along the ground.

A body moving in a cycloid by its own weight or swing, together with some other force acting upon it, will go through all distances of the same course in exactly the same time; and, accordingly, pendulums are contrived to swing in such a manner that they shall describe cycloids, or curves very near cycloids, and thus move in equal times, whether they go through a long or a short part of the curve.

If a body is to descend from any one point to another, not in the perpendicular, by means of some acting on it together with its own weight, the line in which it will go the quickest will be the cycloid, not the straight (though the last is the shortest of all lines that can be drawn between two points).

THE EARTH'S ANNUAL REVOLUTION AN UNCERTAIN MEASURE OF TIME.

Notwithstanding the earth's annual revolution round the sun, we cannot ascertain its real duration, for although this should continue 365¼ days without change, every day, every hour, and every second may be proportionally shorter, without our being able to discover it. La Place computes that since the time of Hipparchus the year has become some few seconds shorter. Possibly the change was greater at first, diminishing, as the earth's orbit approached a true circle.

GREAT WEIGHT OF THE SOLAR INHABITANTS.

As the diameter of the sun (883,000 miles) is 111 times greater than that of the earth, a body at its surface would fall through 450 feet in a second of time; so if there be any human inhabitants residing there, each individual of moderate size must weigh at least two tuns.

The bulk of the sun is 1,300,000 greater than that of the earth.

WOMEN—MARRIAGE.

There are those who deem political subjects beyond the sphere of a woman's, certainly of a young woman's mind. But if our young ladies were to give a portion of the time and interest they expend on dress, gossip, and light reading, to the comprehension of the constitution of their country, and its political institutions, would they be less interesting companions, less qualified mothers, or less amiable women? "But there are dangers in a woman's adventuring beyond her customary path." There are, and better the chance of shipwreck on a voyage of high purpose, than expend life in paddling hither and thither on a shallow stream, to no purpose at all. *The Linwoods—Miss Sedgwick.*

As the cause of humanity, and the advance of civilization, depend mainly on the purity of the institution of marriage, 'I shall not have written in vain, if I have led one mind more highly to appreciate its responsibilities, and estimate its results; its effect not only on the happiness of life, but on that portion of our nature which is destined to immortality: if I persuade even one of my young countrywomen so to reverence herself, and so to estimate the social duties and ties, that she will not give her hand without her heart, nor her heart till she is quite sure of his good desert who seeks it. And, above all, I shall not have written in vain, if I save a single young creature from the barter of youth and beauty for money, the merely legal union of persons and fortunes multiplying among us, partly from wrong education, and false views of the objects of life, but chiefly from the growing imitation of the artificial and vicious society of Europe.

It is only by entering into these holy and most precious bonds, with right motives and right feelings, that licentious doctrines can be effectually overthrown, and the arguments of the more respectable advocates of the new and unscriptural doctrine of divorce can be successfully opposed.

We boldly then advise our young friends so far to cultivate the romance of their natures (if it be romance to value the soul and its high offices above all earthly consideration) as to eschew rich old *roue* bachelors, *looking-out* widowers with large fortunes, and idle, ignorant, young heirs; and to imitate our heroine in trusting to the honourable resources of virtue and talent, and a joint stock of industry and frugality, in a country that is sure to smile upon these qualities, and reward thom with as much worldly prosperity as is necessary to happiness, and safe for virtue.

Southern Rose.

THE EARTH "SHALL MELT WITH FERVENT HEAT."

Mr. Gruithuzen, a celebrated astronomer of Munich, has been recently engaged in some novel astronomical calculations, which have led to startling results. He has announced the precise duration of the earth; the continuance and the *end of Time;* the years of the old, hoary headed fellow, with his rapid wings and unpitying scythe, are exactly numbered, and we can now conceive when he shall exist no longer. Just *one million and fifty thousand years,* according to the calculation, shall have passed away, when the "great globe itself," with orbits that shall have been for a long time fearfully contracting, will reach its goal, and be absorbed by the sun and consumed by solar fire! Then will have arrived the awful consummation of that prediction—the earth "shall melt with fervent heat,"—the heavens depart, "as a scroll that is rolled together, and a mighty voice proclaim, There shall be time no longer."

That such will be the fate of the earth, is an old suggestion of the astronomers. But supposing it a fanciful one, a mere dreary chimera of an astronomical imagination, we never expected to see it demonstrated by mathematical calculation. We recollect that one of our college friends embellished his commencement address with the idea. He contrasted human destiny with that of the ocean, and spoke thus of the latter:—

"Fixed are the limits of his long career—
Himself to wreck and ruin is allied!—
The powers that wheel him through the changing year
In vast successive orbits round the solar sphere,"

"Shall sunward urge him to his fiery doom,
When all the countless sands of Time are run—
When Earth has faded from the nuptial bloom
With which the glory of her reign begun.
Still near and nearer, towards the central Sun,
Attraction curves them in the circling sweep
Of orbits less'ning to their final one,
And like the vessel in the Maelstroom—deep
Into the burning mass they sink to endless sleep."

Can we any longer think this prediction a mere fanciful suggestion? Are we not endangering our reputation as individuals of acute apprehension and sound judgment by doubting the truth and precision of this calculation? Do we not predict eclipses, the transits of planets, and the revolution and return of comets after their wanderings of nearly a century, with a certainty that always proves unerring? If we may judge from later manifestations, is it not believed to be highly probable that a telescope might be manufactured, which should bring the moon within the apparent distance of a *hundred yards?* Nothing in this age seems impossible; almost all things have ceased to be surprising. Therefore, do we deem it dangerous to doubt that any thing uncommon has happened, or that any thing extraordinary has been done. James the first, suppressed Dr. Cowell's Interpreter, because it was "too curious in its researches." "This later age and times of the world wherein we are fallen, is so much given to verbal profession, as well of religion, as of all commendable moral virtues, but wanting the actions and deeds agreeable to so specious a profession, as it hath bred such an unsatiable curiosity in many men's spirit, and such an itchingin the tongues and pens of most men, as nothing is left unsearched to the bottom both in talking and writing. For from the very highest mysteries in the Godhead and the most inscrutable counsels in the Trinity, to the very lowest pit of hell, and the confused actions of the devils there; there is nothing now unsearched into by the curiosity of men's brains." But James knew that men's curiosity would pry under his "divine right," and he greatly feared that an increase of knowledge on that subject would increase his sorrow. These are days of free thought and of free action; and human skill, curiosity, and invention know no bounds—human knowledge and discovery no limits.

THE KNOT-RECORDS OF PERU.

It is generally known that the inhabitants of Peru were found, on the discovery of America, to possess a degree of intelligence and a range of social institutions, which plainly pointed out that the nation must have previously had a communication of some kind with Europe. Among the other circumstances distinguishing them from savages, was their system of recording events and conveying ideas by means of knotted cords, called *Quipoes*. From the accounts left by the Spaniards who conquered the country, it appears that these *quipoes* were, in general, formed of the intestines of animals, like our catgut, on which were knots and loops, the varieties of which represented letters; and there was a class of men like our notaries and clerks of council, whose business it was to compose these volumes; the name given to these officers was Quipo-camayoes. The knots are diversified by colours, for minute distinction. There is extant, in a Spanish work published in 1608, a minute account of all that took place at a meeting between Garcilasso de la Vega, an officer of the king of Spain, and the inca of Peru; being a transcription of the report of record taken of the proceedings by two Quipo-camayoes, who sat all the time in the hall of audience, engaged upon their task. In the year 1827, there appeared in London a small quarto volume, giving an account of a bunch of these knot-records, which had fallen into the hands of one Alexander Strong, a ship-carpenter, and been brought by him to this country. The story given as to their transmission from an ancient inca of Peru through many different hands, until they came into those of Mr. Strong, need not be repeated here; but we shall give a description, so far as we are able, of the object itself.

The quipoes recovered by Strong were contained in a box of wood which had been cut out of a solid block, and measured eighteen inches in length by eight in breadth and depth. On the outside were painted many apparently unmeaning figures, including one, however, of a man on horseback, which is said to be alluded to in the quipoes within, as representing a dream, in which one of the Peruvian incas foresaw the arrival of the equestrian people by whom they were to be overcome.

The quipoes consist of seven bunches, each of which is formed upon a ring of animal sinew, bedaubed with different paints, and measuring from three to six inches in diameter. The whole form one narrative, which begins with the smallest ring, and goes on to the largest. From the circumference of each ring, proceed from thirty to a hundred cords, exactly resembling the smallest strings of a violin; each string being from twelve to fifteen inches long, and united at both ends to the ring, so as to form what in a riband would be called a bow. On each string are from ten to thirty knots of different degrees of complexity, from a simple through-put, to a complication of loops and twists of three quarters of an inch in diameter. The knots and intervening portions of the string are covered with a substance which gives them the appearance of having been dipped in sealing wax; the colour being for the most part green, but in some of the knots yellow, and in others red.

Alexander Strong, who purchased them for forty-five dollars, from a person who had bought them at Buenos Ayres, with the hope of selling them to advantage in Britain, also received with them a key, consisting of five small slips of leather, scrawled over with something like writing; and it ought to rank high among anecdotes of perseverance, that this humble and unlettered man actually taught himself Latin, in order that he might acquaint himself with the key, which, strange to say, is in that language, and then submitted to the inconceivable drudgery of untying the whole successive parts of this worse than Gordian knot. Having first arrived at English for the various Latin words, he proceeded to apply them to the various knots which they referred to, and finally, by wonderful skill and industry, made out a rude narrative of the whole, which remains as a monument of his extraordinary task.

It appears, that in the quipoes belonging to Mr. Strong, proper names are given in red knots, numerals in yellow, while other parts of speech are in green. On examining the numerals in the quipoes, it is found, that instead of advancing as we do by *tens*, the Peruvians advanced by *threes;* which is perhaps the reason that certain American nations have been represented as unable to count farther than three. *One* is represented as the commonest knot, such as seamstresses generally make on a thread on taking the first stitch. *Two* is represented by a knot, in which the end is put through once more before drawing tight, as a seamstress does when it is desired to increase the magnitude of the knot. And *three* is expressed by performing the same operation an additional time. But *four* assumes a new conformation, for it is expressed by a *loop* of the simplest kind, such as is made, in nautical language, by taking a bend on the bight of the rope; and *five* is expressed by the same kind of loop, with an additional twist in the *clinch* or part where the whole is drawn tight; and *six* has another twist still. *Seven* is another kind of loop, which is manifestly different from *four*, though it would probably puzzle a forecastle-man to define the difference in words. *Eight* is the same with the addition of another twist in the clinch, and *nine* with another. *Ten* is no loop at all, but a portentous kind of a knot, such as might be made in a cat-o'-nine-tails where the object was to kill. *Eleven* is the same with an additional twist of the *clinch;* and *twelve* with another. *Thirteen* is the same kind of knot as *ten*, only with a loop sprouting out on one side: and *fourteen* and *fifteen* distinguish themselves by their twists as before. In this manner the system goes on to a hundred—for so far the unknown apocalypst has chosen to carry his operations;—

exhibiting a new knot at every third numeral, and expressing the two next by additions at the clinch. The knots, as may readily be imagined, in time grow exceedingly complicated and artificial; but they invariably adhere to the *ternary* system described.

The number of knots in the skin of proper names is 102, and in the three collections of green knots, 231; so that, with the addition of the hundred numerals, the whole number of knots or ideographick symbols is 433. The positive contents, as presented by the key, are in the main very analogous to the account of Peruvian traditions given by Humboldt and Bonpland, as follows:—"The cosmogony of the Mexicans—their traditions on the subject of the mother of mankind falling from her first estate of happiness and innocence—the notion of a great inundation, in which a solitary family escaped upon a raft—the account of a building like a pyramid, raised by the pride of mankind and destroyed by the anger of the gods—the ceremonies of ablution practised at the birth of children—their idols made of maize flour kneaded into paste, and distributed in portions to the people collected in the inclosure of the temples—their confessions of sin made by penitents—their religious associations like our convents of men and of women—the belief universally extended, that white men with long beards, and of great sanctity of manners, had changed the religious and political system of their countrymen—all these circumstances together had led the ecclesiasticks who accompanied the army of the Spaniards at the time of the conquest, to believe that at some very remote period Christianity had been preached in the newly-found continent. Some learned Mexicans thought they discovered the apostle St. Thomas in the mysterious personage, high-priest of Tula, whom the Cholulans knew under the name of Quetzalcoatl. There is no doubt that the doctrines of the Nestorians, mixed with the opinions of the Buddhists and the Chamans, found their way through Mantchou Tartary into the northeast of Asia. It is possible, therefore, to suppose with some appearance of reason, that ideas connected with Christianity may have been communicated by the same road to the Mexican races, and particularly to the inhabitants of that northern region from which the Tolteques migrated."

BEAUTIFUL EXTRACT.

"There is scarcely a profession in which the sympathies of its professors are more painfully excited than that of the medical practitioner. How often is he called to the bed of hopeless sickness; and that, too, in a family, the members of which are drawn together by the closest bonds of love! How painful is it to meet the inquiring gaze of attached friends, or weeping relatives, directed towards him in quest of that consolation, that assurance of safety, which he has not to give! and how melancholy is it to behold the last ray of hope, which had lingered upon the face of affection, giving place to the dark cloud of despair.

"And when all is over—when the bitterness of death hath passed from the dead to the living—from the departed to the bereaved—hark to that shriek of agony, that convulsive sob, that bitter groan, wrung from the heart's core, which bespeaks the utter prostration of the spirit beneath the blow!

"There, cold in the embrace of death, lies the honoured husband of a heart-broken wife—her first, her only love! Or, it may be, the young wife of a distracted husband, the bride of a year, the mother of an hour, and by her, perhaps, the blighted fruit of their love—the bud by the blossom, and both are withered."

Tales of a Physician.

OTTO OF ROSES.

The Royal Society of Edinburgh received from Dr. Monro the following account of the manner in which this costly perfume is prepared in the East: Steep a large quantity of the petals of roses, freed from every extraneous matter, in pure water, in an earthern or wooden vessel, which is exposed daily to the sun, and housed at night, till a scum rises to the surface. This is the *otto*, which is carefully absorbed by a very small piece of cotton tied to the end of a stick. The oil collected. squeeze out of the cotton into a very diminutive vial, stop it for use.—The collection of it should be continued whilst any scum is produced.

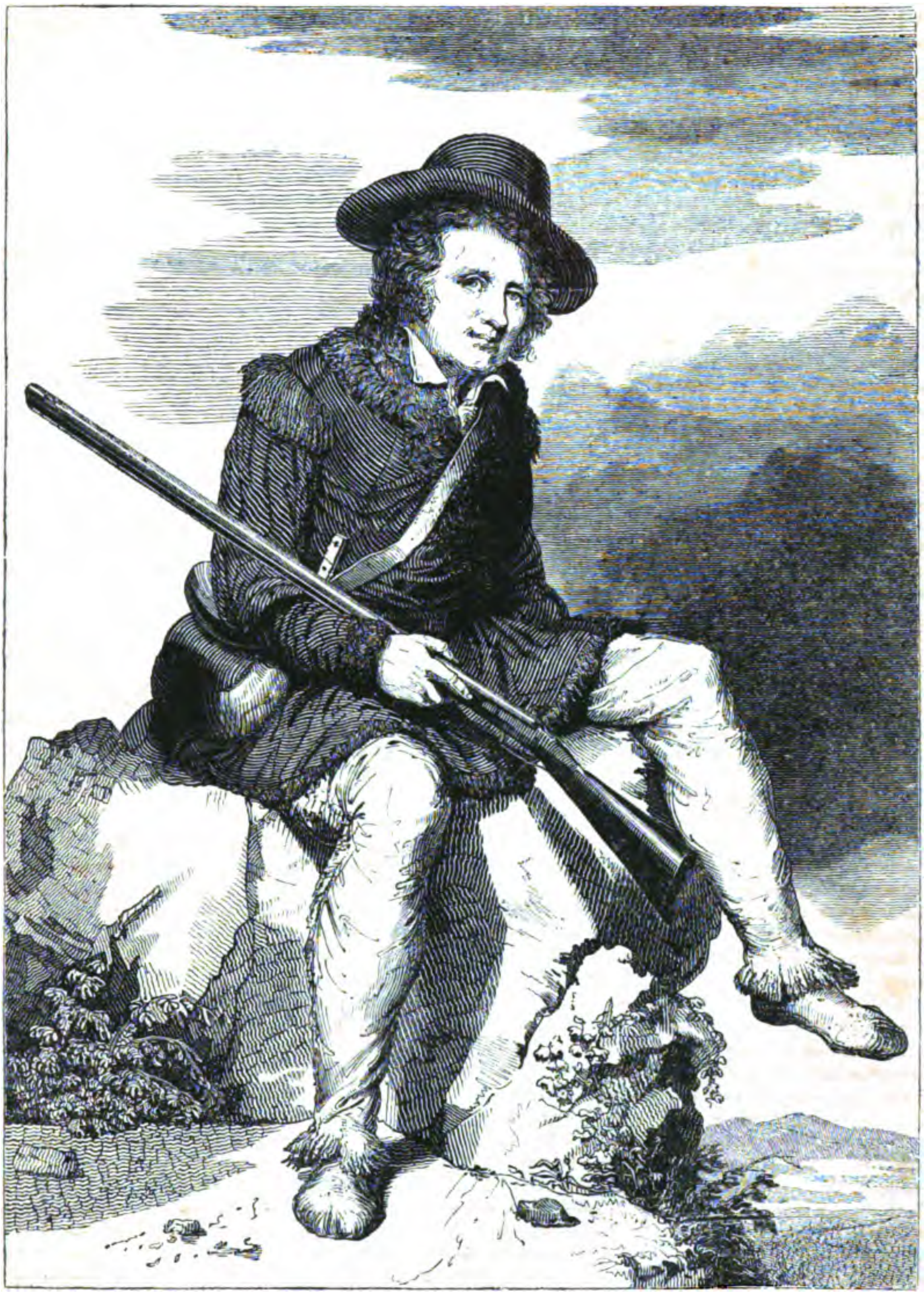
THE KNIGHT'S EPITAPH.—BRYANT.

This is the church which Pisa, great and free,
Reared to St. Catharine. How the time-stained walls
That earthquakes shook not from their poise, appear
To shiver in the deep and voluble tones
Rolled from the organ! Underneath my feet
There lies the lid of a sepulchral vault.
The image of an armed knight is graven
Upon it, clad in perfect panoply.
Cuishes, and greaves, and cuiras, with barred helm,
Gauntleted hand, and sword, and blazoned shield.
Around, in gothick character, worn dim
By feet of worshippers, are traced his name
And birth and death and words of eulogy.
Why should I pour upon them? This old tomb,
This effigy, the strange disused form
Of this inscription, eloquently show
His history. Let me clothe in fitting words
The thoughts they breathe, and frame his epitaph:—

"He whose forgotten dust for centuries
Has lain beneath this stone, was one in whom
Adventure and endurance and emprise
Exalted the mind's faculties and strung
The body's sinews. Brave he was in fight,
Courteous in banquet, scornful of repose,
And bountiful and cruel and devout,
And quick to draw the sword in private feud.
He pushed his quarrels to the death, yet prayed
The saints as fervently on bended knees
As ever shaven cenobite. He loved
As fiercely as he fought. He would have borne
The maid that pleased him from her bower by night,
To his hill castle, as the eagle bears
His victim from the fold, and rolled the rocks
On his pursuers. He aspired to see
His native Pisa queen and arbitress
Of cities; earnestly for her he raised
His voice in council, and affronted death
In battle-field, and climbed the galley's deck,
And brought the captured flag of Genoa back,
Or piled upon the Arno's crowded quay
The glittering spoils of the tamed Saracen.
He was not born to brook the stranger's yoke.
But would have joined the exiles, that withdrew
For ever, when the Florentine broke in
The gates of Pisa, and bore off the bolts
For trophies—but he died before that day.

"He lived, the impersonation of an age
That never shall return. His soul of fire
Was kindled by the breath of the rude time
He lived in. Now, a gentler race succeeds,
Shuddering at blood; the effeminate cavalier,
Turning from the reproaches of the past,
And from the hopeless future, gives to ease,
And love and musick his inglorious life."

N. Y. Mirror.



J. G. Chapman, *del.* Wm. D. Redfield. *sc*

COL. DANIEL BOON, OF KENTUCKY, IN THE COSTUME OF A WESTERN HUNTER.

[The Portrait from a painting in the possession of J. K. Paulding, Esq.]

ADVENTURES OF CAPTAIN DANIEL BOON,

Comprising an Account of the Wars with the Indians on the Ohio, from 1769 to 1782.

WRITTEN BY HIMSELF.

It was on the first of May, 1769, that I resigned my domestick happiness, and left my family and peaceable habitation on the Yadkin river in North Carolina, to wander through the wilderness of America, in quest of the country of Kentucky, in company with John Finley, John Stuart, Joseph Holden, James Monay, and William Cool.

On the seventh of June, after travelling in a western direction, we found ourselves on Red river, where John Finley had formerly been trading with the Indians, and from the top of an eminence saw with pleasure the beautiful level of Kentucky. For some time we had experienced the most uncomfortable weather. We now encamped, made a shelter to defend us from the inclement season, and began to hunt and reconnoitre the country. We found abundance of wild beasts in this vast forest. The buffaloes were more numerous than cattle on their settlements, browsing on the leaves of the cane, or crossing the herbage on these extensive plains. We saw hundreds in a drove, and the numbers about the salt springs were amazing. In this forest, the habitation of beasts of every American kind, we hunted with great success until December.

On the twenty-second of December, John Stuart and I had a pleasing ramble; but fortune changed the day at the close of it. We passed through a great forest, in which stood myriads of trees, some gay with blossoms, others rich with fruits. Nature was here a series of wonders and a fund of delight. Here she displayed her ingenuity and industry in a variety of flowers and fruits, beautifully coloured, elegantly shaped, and charmingly flavoured; and we were favoured with numberless animals presenting themselves perpetually to our view. In the decline of the day, near Kentucky river, as we ascended the brow of a small hill, a number of Indians rushed out of a canebrake and made us prisoners. The Indians plundered us, and kept us in confinement seven days. During this time, we discovered no uneasiness or desire to escape, which made them less suspicious; but in the dead of night, as we lay by a large fire in a thick canebrake, when sleep had locked up their senses, my situation not disposing me to rest, I gently awoke my companion. We seized this favourable opportunity and departed, directing our course towards the old camp, but found it plundered and our company destroyed or dispersed.

About this time, as my brother with another adventurer who came to explore the country shortly after us, was wandering through the forest, they accidentally found our camp. Notwithstanding our unfortunate circumstances, and our dangerous situation, surrounded with hostile savages, our meeting fortunately in the wilderness gave us the most sensible satisfaction.

Soon after this my companion in captivity, John Stuart, was killed by the savages, and the man who came with my brother, while on a private excursion, was soon after attacked and killed by the wolves. We were now in a dangerous and helpless situation, exposed daily to perils and death, among savages and wild beasts, not a white man in the country but ourselves.

Although many hundred miles from our families, in the howling wilderness, we did not continue in a state of indolence, but hunted every day, and prepared a little cottage to defend us from the winter. On the first of May, 1770, my brother returned home, for a new recruit of horses and ammunition, leaving me alone, without bread, salt, or sugar, or even a horse or a dog. I passed a few days uncomfortably. The idea of a beloved wife and family, and their anxiety on my account, would have disposed me to melancholy if I had further indulged the thought.

One day I undertook a tour through the country, when the diversity and beauties of nature I met with in this charming season expelled every gloomy thought. Just at the close of the day, the gentle gales ceased; a profound calm ensued; not a breath shook the tremulous leaf. I had gained the summit of a commanding ridge, and looking around with astonishing delight, beheld the ample plains and beauteous tracts below. On one hand, I surveyed the famous Ohio rolling in silent dignity, and marking the western boundary of Kentucky with inconceivable grandeur. At a vast distance, I beheld the mountains lift their venerable brows and penetrate the clouds. All things were still. I kindled a fire near a fountain of sweet water, and feasted on the line of a buck which I had killed a few hours before. The shades of night soon overspread the hemisphere, and the earth seemed to gasp after the hovering moisture. At a distance I frequently heard the hideous yells of savages. My excursion had fatigued my body and amused my mind. I laid me down to sleep, and awoke not until the sun had chased away the night. I continued this tour, and in a few days explored a considerable part of the country, each day equally pleasing as the first. After which I returned to my old camp, which had not been disturbed in my absence. I did not confine my lodging to it, but often reposed in thick canebrakes to avoid the savages, who I believe frequently visited my camp, but fortunately for me, in my absence. No populous city, with all its varieties of commerce and stately structures, could afford such pleasure to my mind, as the beauties of nature I found in this country.

Until the twenty-seventh of July, I spent my time in an uninterrupted scene of sylvan pleasures, when my brother, to my great felicity, met me, according to appointment at our old camp. Soon after we left the place, and proceeded to Cumberland river, reconnoitring that part of the country, and giving names to the different rivers.

In March, 1771, I returned home to my family, being determined to bring them as soon as possible, at the risk of my life and fortune, to reside in Kentucky, which I esteemed a second paradise.

On my return, I found my family in happy circumstances. I sold my farm on the Yadkin, and what goods we could not carry with us, and on the twenty-fifth of September, 1773, we took leave of our friends and proceeded on our journey to Kentucky, in company with five more families, and forty men that joined us in Powel's Valley, which is one hundred and fifty miles from the new settled parts of Kentucky. But this promising beginning was soon overcast with a cloud of adversity.

On the tenth of October the rear of our company was attacked by a party of Indians; who killed six, and wounded one man. Of these my oldest son was one that fell in the action. Though we repulsed the enemy, yet this unhappy affair scattered our cattle and brought us into extreme difficulty. We returned forty miles to the settlement on Clench river. We had passed over two mountains, Powel and Walden's, and were approaching Cumberland mountain, when this adverse fortune overtook us. These mountains are in the wilderness, in passing from the old settlement in Virginia to Kentucky; are ranged in a southwest and northeast direction; are of great length and breadth, and not far distant from each other. Over them nature has formed passes less difficult than might be expected from the view of such huge piles. The aspect of these cliffs are so wild and horrid, that it is impossible to behold them without horrour.

Until the sixth of June, 1774, I remained with my family on the Clench, when myself and another person were solicited by Governour Dunmore, of Virginia, to conduct a number of surveyors to the falls of Ohio. This was a tour of eight hundred miles, and took sixty-two days.

On my return, Gov. Dunmore gave me the command of three garrisons during the campaign against the Shawanese. In March, 1765, at the solicitation of a number of gentlemen of North Carolina, I attended their treaty at Wataga with the Cherokee Indians, to purchase the lands on the south side of Kentucky river. After this, I undertook to mark out a road in the best passage from the settlements through the wilderness to Kentucky.

Having collected a number of enterprising men well armed, I soon began this work. We proceeded until we came within fifteen miles of where Boonsborough now stands, where the Indians attacked us, and killed two and wounded two more of our party. This was on the twenty-second of March, 1775. Two days after we were again attacked by them, when we had two more killed and three wounded. After this, we proceeded on to Kentucky river without opposition.

On the first of April, we began to erect the fort of Boonsborough, at a salt lick sixty yards from the river on the south side. On the fourth the Indians killed one of our men. On the fourteenth of June, having completed the fort, I returned to my family on the Clench, and whom I soon after removed to the fort. My wife and daughter, were supposed to be the first white women that ever stood on the banks of Kentucky river.

On the twenty-fourth of December, the Indians killed one of our men and wounded another; and on the fifteenth of July, 1776, they took my daughter prisoner. I immediately pursued them with eight men, and on the sixteenth overtook and engaged them. I killed two of them and recovered my daughter.

The Indians, having divided themselves into several parties, attacked in one day all our infant settlements and forts, doing a great deal of damage. The husbandmen were ambushed and unexpectedly attacked while toiling in the field. They continued this kind of warfare until the fifteenth of April, 1777, when nearly one hundred of them attacked the village of Boonsborough, and killed a number of its inhabitants. On the sixteenth Colonel Logan's fort was attacked by two hundred Indians. There were only thirteen men in the fort, of whom the enemy killed two and wounded one.

On the twentieth of August, Colonel Bowman arrived with one hundred men from Virginia, with which additional force we had almost daily skirmishes with the Indians, who began now to learn the superiority of the "long knife," as they termed the Virginians; being outgeneralled in almost every action. Our affairs began now to wear a better aspect, the Indians no longer daring to face us in open field, but sought private opportunities to destroy us.

On the seventh of February, 1778, while on a hunting excursion alone, I met a party of one hundred and two Indians and two Frenchmen, marching to attack Boonsborough. They pursued and took me prisoner, and conveyed me to Old Chilicothe, the principal Indian town on little Miami, where we arrived on the eighteenth of February, after an uncomfortable journey. On the tenth of March I was conducted to Detroit, and while there, was treated with great humanity by Governour Hamilton, the British commander, at that port, and intendant for Indian affairs.

The Indians had such an affection for me, that they refused one hundred pounds sterling, offered them by the governour, if they would consent to leave me with him, that he might be enabled to liberate me on my parole. Several English gentlemen then at Detroit, sensible of my adverse fortune and touched with sympathy, generously offered to supply my wants, which I declined with many thanks, adding that I never expected it would be in my power to recompense such unmerited generosity.

On the tenth of April, the Indians returned with me to Old Chilicothe, where we arrived on the twenty-fifth. This was a long and fatiguing march, although through an exceeding fertile country, remarkable for springs and streams of water. At Chilicothe I spent my time as comfortable as I could expect; was adopted, according to their custom, into a family where I became a son, and had a great share in the affection of my new parents, brothers, sisters, and friends. I was exceedingly familiar and friendly with them, always appearing as cheerful and contented as possible, and they put great confidence in me. I often went a hunting with them, and frequently gained their applause for my activity at our shooting matches. I was careful not to exceed many of them in shooting, for no people are more envious than they in this sport. I could observe in their countenances and gestures the greatest expressions of joy when they exceeded me, and when the reverse happened, of envy. The Shawanese king took great notice of me, and treated me with profound respect and entire friendship, often intrusting me to hunt at my liberty. I frequently returned with the spoils of the woods, and as often presented some of what I had taken to him, expressive of duty to my sovereign. My food and lodging were in common with them, not so good indeed as I could desire, but necessity made every thing acceptable.

I now began to meditate an escape, and carefully avoided giving suspicion. I continued at Chilicothe until the first day of June, when I was taken to the salt springs on Sciotha, and there employed ten days in the manufacturing of salt. During this time, I hunted with my Indian masters, and found the land for a great extent about this river to exceed the soil of Kentucky.

On my return to Chilicothe, one hundred and fifty of the choicest Indian warriours were ready to march against Boonsborough. They were painted and armed in a frightful manner. This alarmed me, and I determined to escape.

On the twenty-sixth of June, before sunrise, I went off secretly, and reached Boonsborough on the thirtieth, a journey of one hundred and sixty miles, during which I had only one meal. I found our fortress in a bad state, but we immediately repaired our flanks, gates, posterns, and formed double bastions, which we completed in ten days. One of my fellow prisoners escaped after me, and brought advice, that on account of my flight, the Indians had put off their expedition for three weeks.

About the first of August, I set out with nineteen men, to surprise Point Creek-town on Sciotha, within four miles of which we fell in with forty Indians going against Boonsborough. We attacked them, and they soon gave way without any loss on our part.

The enemy had one killed and two wounded. We took three horses and all their baggage. The Indians having evacuated their town, and gone altogether against Boonsborough, we returned, passed them on the sixth, and on the seventh, arrived safe at Boonsborough.

On the ninth, the Indian army, consisting of four hundred and forty-four men, under the command of Captain Duquesne, and eleven other Frenchmen, and their own chiefs, arrived and summoned the fort to surrender. I requested two days' consideration, which was granted. During this we brought in through the posterns all the horses and other cattle we could collect.

On the ninth, in the evening, I informed their commander, that we were determined to defend the fort while a man was living. They then proposed a treaty, they would withdraw. The treaty was held within sixty yards of the fort, as we suspected the savages. The articles were agreed to and signed; when the Indians told us, it was their custom for two Indians to shake hands with every white man in the treaty, as an evidence of friendship. We agreed to this also. They immediately grappled us to take us prisoners, but we cleared ourselves of them, though surrounded by hundreds, and gained the fort safe, except one man, who was wounded by a heavy fire from the enemy.

The savages now began to undermine the fort, beginning at the watermark of Kentucky river, which is sixty yards from the fort; this we discovered by the water being made muddy by the clay. We countermined them by cutting a trench across their subterraneous passage. The enemy discovering this by the clay we threw out of the fort, desisted. On the twentieth of August, they raised the siege, during which we had two men killed and four wounded. We lost a number of cattle. The loss of the enemy was thirty-seven killed, and a much larger number wounded. We picked up one hundred and twenty-five pounds of their bullets, besides what stuck in the logs of the fort.

In July, 1779, during my absence, Colonel Bowman, with one hundred and sixty men, went against the Shawanese of Old Chilicothe. He arrived undiscovered. A battle ensued, which lasted until ten in the morning, when Colonel Bowman retreated thirty miles. The Indians collected all their strength and pursued him, when another engagement ensued for two hours, not to Colonel Bowman's advantage. Colonel Harrod proposed to mount a number of horses, and break the enemy's line, who at this time fought with remarkable fury. This desperate measure had a happy effect, and the savages fled on all sides. In these two engagements we had nine men killed and one wounded. Enemy's loss uncertain. Only two scalps were taken.

June twenty-third, 1780, five hundred Indians and Canadians under Colonel Bird, attacked Riddle and Martain's station, and the forks of Licking river, with six pieces of artillery. They took all the inhabitants captives, and killed one man and two women, loading the others with the heavy baggage, and such as failed in the journey were tomahawked.

The hostile disposition of the savages caused General Clark, the commandant at the falls of Ohio, to march with his regiment and the armed force of the country against Peccaway, the principal town of the Shawanese, on a branch of the great Miami, which he attacked with great success, took seventy scalps, and reduced the town to ashes, with the loss of seventeen men.

About this time, I returned to Kentucky with my family; for during my captivity, my wife thinking me killed by the Indians, had transported my family and goods on horses, through the wilderness, amidst many dangers, to her father's house in North Carolina.

On the sixth of October, 1780, soon after my settling again at Boonsborough, I went with my brother to the Blue Licks, and on our return he was shot by a party of Indians, who followed me by the scent of a dog, which I shot and escaped. The severity of the winter caused great distress in Kentucky, the enemy during the summer having destroyed most of the corn. The inhabitants lived chiefly on buffalo's flesh.

In the spring of 1782, the Indians harassed us. In May they ravished, killed, and scalped a woman and her two daughters near Ashton's station, and took a negro prisoner. Captain Ashton pursued them with twenty-five men, and in an engagement which lasted two hours, his party were obliged to retreat, having eight killed, and four mortally wounded. Their brave commander fell in the action.

August eighteenth, two boys were carried off from Major Hoy's station. Captain Holder pursued the enemy with seventeen men, who were also defeated, with the loss of seven killed and two wounded. Our affairs became more and more alarming. The savages infested the country and destroyed the whites as opportunity presented. In a field near Lexington, an Indian shot a man, and running to scalp him, was himself shot from the fort, and fell dead upon the ground. All the Indian nations were now united against us.

August fifteenth, five hundred Indians and Canadians came against Briat's station, five miles from Lexington. They assaulted the fort, and killed all the cattle round it; but being repulsed, they retired the third day, having about eighty killed; their wounded uncertain. The garrison had four killed, and nine wounded.

August eighteenth, Colonels Todd and Trigg, Major Harland and myself, speedily collected one hundred and seventy-six men, well-armed, and pursued the savages. They had marched beyond the Blue Licks, to a remarkable bend of the main fork of Licking river, about forty-three miles from Lexington, where we overtook them on the nineteenth. The savages observing us, gave way, and we ignorant of their numbers, passed the river. When they saw our proceedings, having greatly the advantage in situation, they formed their line of battle from one end of the Licking to the other, about a mile from the Blue Licks. The engagement was close and warm for about fifteen minutes, when we being overpowered by numbers, were obliged to retreat, with the loss of sixty-seven men, seven of whom were taken prisoners. The brave and much lamented colonels, Todd and Trigg, Major Harland, and my second son, were among the dead. We were afterwards informed that the Indians, on numbering their dead, finding that they had four more killed than we, four of our people they had taken were given up to their young warriours, to be put to death after their barbarous manner.

On our retreat, we were met by Colonel Logan, who was hastening to join us with a number of well-armed men. This powerful assistance we wanted on the day of battle. The enemy said, one more fire from us would have made them give way.

I cannot reflect upon this dreadful scene, without great sorrow. A zeal for the defence of their country led these heroes to the scene of action, though with a few men, to attack a powerful army of experienced warriours. When we gave way, they pursued us with the utmost eagerness, and in every quarter spread destruction. The river was difficult to cross, and many were killed in the fight, some just entering the river, some in the water, others after crossing in ascending the cliffs. Some escaped on horseback, a few on foot; and being dispersed everywhere, in a few hours, brought the melancholy news of this unfortunate battle to Lexington. Many widows were now made. The reader may guess what sorrow filled the hearts of the inhabitants, exceeding any thing that I am able to describe. Being reinforced, we returned to bury the dead, and found their bodies strewed everywhere, cut and mangled in a dreadful manner. This mournful scene exhibited a horrour almost unparalleled: some torn and eaten by wild beasts; those in the river eaten by fishes; all in such a putrid condition that no one could be distinguished from another.

When General Clark, at the falls of Ohio, heard of our disaster, he ordered an expedition to pursue the savages. We overtook them within two miles of their town, and we should have obtained a great victory had not some of them met us when about two hundred poles from their camp. The savages fled in the utmost disorder, and evacuated all their towns. We burned to ashes Old Chilicothe, Peccaway, New Chilicothe, and Willstown; entirely destroyed their corn and other fruits, and spread desolation through their country. We took seven prisoners and fifteen scalps, and lost only four men, two of whom were accidentally killed by ourselves. This campaign damped the enemy, yet they made secret incursions.

In October, a party attacked Crab Orchard, and one of them being a good way before the other, boldly entered a house, in which were only a woman and her children, and a negro man. The savage used no violence, but attempted to carry off the negro, who happily proved too strong for him, and threw him on the ground, and in the struggle the woman cut off his head with an axe, whilst her little daughter shut the door. The savages instantly came up and applied their tomahawks to the door, when the mother putting an old rusty gunbarrel through the crevice, the savages immediately went off.

From that time till the happy return of peace between the United States and Great Britain, the Indians did us no mischief. Soon after this the Indians desired peace.

Two darling sons and a brother I have lost by savage hands, which have also taken from me forty valuable horses, and abundance of cattle. Many dark and sleepless nights have I spent, separated from the cheerful society of men, scorched by the summer's sun, and pinched by the winter's cold, an instrument ordained to settle the wilderness.

DANIEL BOON.

Fayette county, Kentucky.

PRESIDENT'S MESSAGE.

We extract that portion of the Message which refers to our relations with France, which is at the present moment, the all-engrossing topick of conversation in every circle of society. It gives an interesting history of the aggressions and injustice of France, and as such we have deemed it useful to record it.—Editor.

"Since the last session of Congress, the validity of our claims upon France, as liquidated by the treaty of 1831, has been acknowledged by both branches of her legislature, and the money has been appropriated for their discharge; but the payment is, I regret to inform you, still withheld.

A brief recapitulation of the most important incidents in this protracted controversy, will show how utterly untenable are the grounds upon which this course is attempted to be justified.

On entering upon the duties of my station, I found the United States an unsuccessful applicant to the justice of France, for the satisfaction of claims, the validity of which was never questionable, and has now been most solemnly admitted by France herself. The antiquity of these claims, their high justice, and the aggravating circumstances out of which they arose, are too familiar to the American people to require description. It is sufficient to say, that for a period of ten years and upwards, our commerce was, with but little interruption, the subject of constant aggressions on the part of France—aggressions, the ordinary features of which were condemnations of vessels and cargoes under arbitrary decrees, adopted in contravention, as well of the laws of nations, as of treaty stipulations; burning on the high seas; and seizures and confiscations, under special imperial rescripts, in the ports of other nations occupied by the armies, or under the control of France.

Such, it is now conceded, is the character of the wrongs we suffered—wrongs, in many cases, so flagrant, that even their authors never denied our right to reparation. Of the extent of these injuries, some conception may be formed from the fact, that after the burning of a large amount at sea, and the necessary deterioration, in other cases by long detention, the American property so seized and sacrificed at forced sales, excluding what was adjudged to privateers, before or without condemnation, brought into the French treasury upwards of twenty-four millions of francs, besides large custom-house duties.

The subject had already been an affair of twenty years' uninterrupted negotiation, except for a short time, when France was overwhelmed by the military power of united Europe. During this period, whilst other nations were extorting from her, payment of their claims at the point of the bayonet, the United States intermitted their demand for justice, out of respect to the oppressed condition of a gallant people, to whom they felt under obligations for fraternal assistance in their own days of suffering and of peril. The bad effects of these protracted and unavailing discussions, as well upon our relations with France as upon our national character, were obvious; and the line of duty was to my mind equally so. This was, either to insist upon the adjustment of our claims within a reasonable period, or to abandon them altogether. I could not doubt, that by this course, the interests and honour of both countries would be best consulted. Instructions were therefore given in this spirit, to the minister who was sent out once more to demand reparation. Upon the meeting of Congress, in December, 1829, I felt it my duty to speak of these claims, and the delays of France, in terms calculated to call the serious attention of both countries to the subject. The then French ministry took exception to the message, on the ground of its containing a menace, under which it was not agreeable to the French government to negotiate.

The American minister, of his own accord refused the construction which was attempted to be put upon the message, and at the same time, called to the recollection of the French ministry, that the President's message was a communication addressed, not to foreign governments, but to the Congress of the United States, in which it was enjoined upon him, by the constitution, to lay before that body information of the state of the Union, comprehending its foreign as well as its domestick relations; and that, if in the discharge of this duty he felt it incumbent upon him to summon the attention of Congress, in due time, to what might be the possible consequences of existing difficulties with any foreign government, he might fairly be supposed to do so, under a sense of what was due from him in a frank communication with another branch of his own government, and not from any intention of holding a menace over a foreign power. The views taken by him received my approbation, the French government was satisfied, and the negotiation was continued. It terminated in the treaty of July 4, 1831, recognising the justice of our claims, in part, and promising payment to the amount of twenty-five millions of francs, in six annual instalments.

The ratifications of this treaty were exchanged at Washington, on the 2d of February, 1832; and in five days thereafter it was laid before Congress, who immediately passed the acts necessary, on our part, to secure to France the commercial advantages conceded to her in the compact. The treaty had previously been solemnly ratified by the king of the French, in terms which are certainly not mere matters of form, and of which the translation is as follows:—"We, approving the above convention, in all and each of the dispositions which are contained in it, do declare, by ourselves, as well as by our heirs and successors, that it is accepted, approved, ratified, and confirmed; and by these presents, signed by our hand, we do accept, approve, ratify, and confirm it: promising on the faith and word of a king, to observe it, and to cause it to be observed inviolably, without ever contravening it, or suffering it to be contravened, directly or indirectly, for any cause or under any pretence whatsoever."

Official information of the exchange of ratifications in the United States, reached Paris whilst the chambers were in session. The extraordinary, and to us injurious delays of the French government, in their action upon the subject of its fulfilment, have been heretofore stated to Congress, and I have no disposition to enlarge upon them here. It is sufficient to observe, that the then pending session was allowed to expire without even an effort to obtain the necessary appropriations, that the two succeeding ones were also suffered to pass away, without any thing like a serious attempt to obtain a decision upon the subject; and that it was not until the fourth session, almost three years after the conclusion of the treaty, and more than two years after the exchange of ratifications, that the bill for the execution of the treaty was pressed to a vote, and rejected.

In the mean time, the government of the United States having full confidence that a treaty entered into and so solemnly ratified by the French king, would be executed in good faith, and not doubting that provision would be made for the payment of the first instalment, which was to become due on the second day of February, 1833, negotiated a draft for the amount through the bank of the United States. When this draft was presented by the holder, with the credentials required by the treaty to authorize him to receive the money, the government of France allowed it to be protested. In addition to the injury in the non-payment of the money by France, conformably to her engagement, the United States were exposed to a heavy claim on the part of the bank, under pretence of damages, in satisfaction of which that institution seized upon, and still retains, an equal amount of the publick moneys. Congress was in session when the decision of the chambers reached Washington: and an immediate communication of this apparently final decision of France, not to fulfil the stipulations of the treaty, was the course naturally to be expected from the president.

The deep tone of dissatisfaction which pervaded the publick mind, and the correspondent excitement produced in Congress, by only a general knowledge of the result, rendered it more than probable, that a resort to immediate measures of redress would be the consequence of calling the attention of that body to the subject. Sincerely desirous of preserving the pacifick relations which had so long existed between the two countries, I was anxious to avoid this course if I could be satisfied, that by doing so, neither the interest nor the honour of my country would be compromised. Without the fullest assurances upon that point, I could not hope to acquit myself of the responsibility to be incurred, in suffering Congress to adjourn without laying the subject before them. Those received by me were believed to be of that character.

That the feelings produced in the United States by the news of the rejection of the appropriation, would be such as I have described them to have been, was foreseen by the French government, and prompt measures were taken by it, to prevent the consequences. The king, in person, expressed through our minister at Paris, his profound regret at the decision of the chambers, and promised to send forthwith, a national ship, with despatches to his minister here, authorizing him to give such assurances as would satisfy the government and people of the United States, the treaty would yet be faithfully executed by France. The national ship arrived, and the minister received his instructions. Claiming to act under the authority derived from them, he gave to this government, in the name of his, the most solemn assurances, that as soon after the new elections as the charter would permit, the French chambers would be convened, and the attempt to procure the necessary appropriations renewed: that all the constitutional powers of the king and his ministers should be put in requisition to accomplish the object; and he was understood, and so expressly informed by this government at the time, to engage, that the question should be pressed to decision at a period sufficiently early to permit information of the result to be communicated to Congress at the commencement of their next session. Relying upon these assurances, I incurred the responsibility, great as I regarded it to be, of suffering Congress to separate without communicating with them upon the subject.

The expectations justly founded upon the promises thus solemnly made to this government by that of France, were not realized. The French chambers met on the thirty-first of July, 1834, soon after the election; and although our minister in Paris urged the French ministry to bring the subject before them, they declined doing so. He next insisted that the chambers, if prorogued without acting on the subject, should be reassembled at a period so early that their action on the treaty might be known in Washington prior to the meeting of Congress. This reasonable request was not only declined, but the chambers were prorogued to the twenty-ninth of December, a day so late that their decision, however urgently pressed, could not, in all probability, be obtained in time to reach Washington before the necessary adjournment of Congress by the constitution. The reasons given by the ministry for refusing to convoke the chambers at an earlier period, afterwards proved not to be insuperable, by their actual convocation on the first of December, under a special call, for domestick purposes—which fact, however, did not become known to this government until after the commencement of the last session of Congress.

Thus disappointed in our just expectations, it became my imperative duty to consult Congress in regard to the expediency of a resort to retaliatory measures, in case the stipulations of the treaty should not be speedily complied with; and to recommend such as in my judgment, the occasion called for. To this end, an unreserved communication of the case, in all its aspects, became indispensable. To have shrunk, in making it, from saying all that was necessary to its correct understanding, and that the truth would justify, for fear of giving offence to others, would have been unworthy of us. To have gone on the other hand, a single step further, for the purpose of wounding the pride of a government and people with whom we had so many motives for cultivating relations of amity and reciprocal advantage, would have been unwise and improper. Admonished by the past, of the difficulty of making even the simplest statements of our wrongs, without disturbing the sensibilities of those who had, by their position, become responsible for their redress, and earnestly desirous of preventing further obstacles from that source, I went out of my way to preclude a construction of the message, by which the recommendation that was made to Congress might be regarded as a menace to France, in not only disavowing such a design, but in declaring that her pride and her power were too well known to expect any thing from her fears. The message did not reach Paris till more than a month after the chambers had been in session; and such was the insensibility of the ministry to our rightful claims and just expectations, that our minister had been informed that the matter when introduced, would not be pressed as a cabinet measure.

Although the message was not officially communicated to the French government, and notwithstanding the declaration to the contrary which it contained, the French ministry decided to consider the constitutional recommendation of reprisals, a menace and an insult, which the honour of the nation made it incumbent on them to resent. The measures resorted to by them to evince their sense of the supposed indignity, were, the immediate recall of their minister at Washington, the offer of passports to the American minister at Paris, and a publick notice to the legislative chambers, that all diplomatick intercourse with the United States had been suspended.

Having, in this manner, vindicated the dignity of France, they next proceeded to illustrate her justice. To this end, a bill was immediately introduced into the chamber of deputies, proposing to make the appropriations necessary to carry into effect the treaty. As this bill subsequently passed into a law, the provisions of which now constitute the main subject of difficulty between the two nations, it becomes my duty, in order to place the subject before you in a clear light, to trace the history of its passage, and to refer, with some particularity, to the proceedings and discussions in regard to it. The minister of finance in his opening speech, alluded to the measures which had been adopted to resent the supposed indignity, and recommend the execution of the treaty as a measure required by the honour and justice of France. He, as the organ of the ministry, declared the message, so long as it had not received the sanction of Congress, a mere expression of the personal opinion of the president, for which neither the government nor people of the United States were responsible, and that an engagement had been entered into, for the fulfilment of which, the honour of France was pledged. Entertaining these views, the single condition which the French ministry proposed to annex to the payment of the money, was, that it should not be made until it was ascertained that the government of the United States had done nothing to injure the interests of France, or, in other words, that no steps had been authorized by Congress of a hostile character towards France.

What the disposition or action of Congress might be, was then unknown to the French cabinet. But on the fourteenth of January, the senate resolved that it was, at that time, inexpedient to adopt any legislative measures in regard to the state of affairs between the United States and France, and no action on the subject had occurred in the house of representatives. These facts were known in Paris prior to the twenty-eighth of March, 1835, when the committee, to whom the bill of indemnification had been referred, reported it to the chamber of deputies. That committee substantially re-echoed the sentiments of the ministry, declared that Congress had set aside the proposition of the President, and recommended the passage of the bill, without any other restriction than that originally proposed. Thus was it known to the French ministry and chambers, that if the position assumed by them, and which had been so frequently and solemnly announced as the only one compatible with the honour of France, was maintained, and the bill passed as originally proposed, the money would be paid, and there would be an end of this unfortunate controversy.

But this cheering prospect was soon destroyed by an amendment introduced into the bill at the moment of its passage, providing that the money should not be paid until the French government had received satisfactory explanations of the President's message, of the second of December, 1834; and what is still more extraordinary, the president of the council of ministers adopted this amendment, and consented to its incorporation in the bill. In regard to a supposed insult, which had been formally resented by the recall of their minister, and the offer of passports to ours, they now, for the first time, proposed to ask explanations. Sentiments and propositions, which they had declared could not justly be imputed to the government or people of the United States, are set up as obstacles to the performance of an act of conceded justice to that government and people. They had declared that the honour of France required the fulfilment of the engagement into which the king had entered, unless Congress adopted the recommendations of the message. They ascertained that Congress did not adopt them, and yet that fulfilment is refused, unless they first obtain from the president explanations of an opinion characterized by themselves as personal and inoperative.

The conception that it was my intention to menace or insult the government of France, is as unfounded as the attempt to extort from the fears of that nation what her sense of justice may deny, would be vain and ridiculous. But the constitution of the United States imposes on the president the duty of laying before Congress the condition of the country, in its foreign and domestick relations, and of recommending such measures as may, in his opinion, be required by its interests. From the performance of this duty, he cannot be deterred by the fear of wounding the sensibilities of the people or government of whom it may become necessary to speak; and the American people are incapable of submitting to an interference, by any government on earth, however powerful, with the free performance of the domestick duties, which the constitution has imposed on their publick functionaries. The discussions which intervene between the several departments of our government belong to ourselves: and for any thing said in them, our publick servants are only responsible to their own constituents, and to each other.

If, in the course of their consultation, facts are erroneously stated, or unjust deductions are made, they require no other inducement to correct them, however informed of their errour, than their love of justice, and what is due to their own character; but they can never submit to be interrogated upon the subject, as a matter of right by a foreign power. When our discussions terminate in acts, our responsibility to foreign power commences, not as individuals, but as a nation. The principle which calls in question the President for the language of his message, would equally justify a foreign power, in demanding explanation of the language used in the report of a committee, or by a member in debate.

This is not the first time that the government of France has taken exception to the messages of American presidents. President Washington, and the first President Adams, in performance of their duties to the American people, fell under the animadversions of the French directory. The exception taken by the ministry of Charles X., and removed by the explanations made by our minister upon the spot, has already been adverted to. When it was understood that the ministry of the present king took exception to my message of last year, putting a construction upon it which was disavowed on its face, our late minister at Paris, in answer to the note which first announced a dissatisfaction with the language used in the message, made a communication to the French government under date of the twenty-ninth of January, 1835, calculated to remove all impressions which an unreasonable susceptibility had created. He repeated, and called the attention of the French government to the disavowal contained in the message itself, of any intention to intimidate by menace—he truly declared that it contained, and was intended to contain, no charge of ill faith against the king of the French, and properly distinguished between the right to complain, in unexceptionable terms, of the omission to execute an agreement, and an accusation of bad motives in withholding such execution—and demonstrated, that the necessary use of that right ought not to be considered as an offensive imputation.

Although this communication was made without instructions, and entirely on the minister's own responsibility, yet it was afterwards made the act of this government, by my full approbation, and that approbation was officially made known on the twenty-fifth of April, 1835, to the French government. It, however, failed to have any effect. The law, after this friendly explanation, passed with the obnoxious amendment, supported by the king's ministers, and was finally approved by the king.

The people of the United States are justly attached to a pacifick system, in their intercourse with foreign nations. It is proper, therefore, that they should know whether their government has adhered to it. In the present instance, it has been carried to the utmost extent that was consistent with a becoming self-respect. The note of the twenty-ninth of January, to which I have before alluded, was not the only one which our minister took upon himself the responsibility of presenting on the same subject, and in the same spirit. Finding that it was intended to make the payment of a just debt, dependant on the performance of a condition which he knew could never be complied with, he thought it a duty to make another attempt to convince the French government, that while self-respect and regard to the dignity of other nations would always prevent us from using any language that ought to give offence, yet we could never admit a right in any foreign government to ask explanations of, or to interfere in any manner in, the communications which one branch of our publick councils made with another: that in the present case, no such language had been used, and that this had in a former note been fully and voluntarily stated, before it was contemplated to make the explanation a condition: and, that there might be no misapprehension, he stated the terms used in that note, and he officially informed them that it had been approved by the president; and that, therefore, every explanation which could reasonably be asked, or honourably given, had been already made—that the contemplated measure had been anticipated by a voluntary and friendly declaration, and was therefore not only useless, but might be deemed offensive, and certainly would not be complied with, if annexed as a condition.

When this latter communication, to which I specially invite the attention of Congress, was laid before me, I entertained the hope that the means it was obviously intended to afford, of an honourable and speedy adjustment of the difficulties between the two nations, would have been accepted: and I therefore did not hesitate to give it my sanction and full approbation. This was due to the minister who had made himself responsible for the act; and it was published to the people of the United States, and is now laid before their representatives, to show how far their executive has gone in its endeavours to restore a good understanding between the two countries. It would have been at any time, communicated to the government of France, had it been officially requested.

The French government having received all the explanation which honour and principle permitted, and which could in reason be asked, it was hoped it would no longer hesitate to pay the instalments now due. The agent authorized to receive the money was instructed to inform the French minister of his readiness to do so. In reply to this notice, he was told that the money could not then be paid, because the formalities required by the act of the chambers had not been arranged.

Not having received any official communication of the intentions of the French government, and anxious to bring as far as practicable, this unpleasant affair to a close before the meeting of Congress, that you might have the whole subject before you, I caused our charge d'affaires at Paris to be instructed to ask for the final determination of the French government; and in the event of their refusal to pay the instalments now due, without further explanations, to return to the United States.

The result of this last application has not yet reached us, but is daily expected. That it may be favourable, is my sincere wish. France having now, through all the branches of her government, acknowledged the validity of our claims, and the obligation of the treaty of 1831; and there really existing no adequate cause for further delay, will, at length, it may be hoped, adopt the course which the interests of both nations, not less than the principles of justice, so imperiously require. The treaty being once executed on her part, little will remain to disturb the friendly relations of the two countries; nothing, indeed, which will not yield to the suggestions of a pacifick and enlightened policy, and to the influence of that mutual good-will and of those generous recollections, which we may confidently expect will then be revived in all their ancient force. In any event, however, the principle involved in the new aspect, which has been given to the controversy, is so vitally important to the independent administration of the government, that it can neither be surrendered nor compromised, without national degradation.

I hope it is unnecessary for me to say, that such a sacrifice will not be made through any agency of mine. The honour of my country shall never be stained by an apology from me, for the statement of truth and performance of duty; nor can I give any explanation of my official acts, except such as is due to integrity and justice, and consistent with the principles on which our institutions have been framed. This determination will, I am confident, be approved by my constituents. I have, indeed, studied their character to but little purpose, if the sum of twenty-five millions of franks will have the weight of a feather, in the estimation of what appertains to their national independence; and if unhappily, a different impression should at any time obtain in any quarter, they will, I am sure, rally round the government of their choice with alacrity and unanimity, and silence for ever the degrading imputation.

Having thus frankly presented to you the circumstances which since the last session of Congress, have occurred in this interesting and important matter, with the views of the executive in regard to them, it is at this time only necessary to add, that whenever the advices, now daily expected from our charge d'affaires, shall have been received, they will be made the subject of a special communication.

To judge by the event, is an errour all abuse and all commit; for, in every instance, courage, if crowned with success, is heroism; if clouded by defeat, temerity. When Nelson fought his battle in the Sound, it was the result *alone*, that decided whether he was to kiss a *hand* at court, or a *rod* at a court-martial.

BOTANY.

THE BUD.

The bud of plants may be defined, the winter residence of leaves and flowers. In hot countries they are generally wanting. They are defended by imbricate scales, and mostly by a clammy, glutinous substance also.

Leaf-buds are slender and sharp, and bear only leaves.

Flower-buds are thicker and softer, and bear only flowers.

There are other buds which are both leaf and flower bearing, and are smaller than either of the other kinds.

Leaf-buds generally contain only the rudiment of one axis or stem, but those of pine, fir, and other trees of that kind, contain several, each enclosed in its own proper perule.

When the plant has no stem, the buds are produced in the axillæ of the root-leaves, as in the daisy, primrose, &c.

The *bulb* is essentially a bud, but differs from ordinary ones in not producing a stem, and in being formed at, or just under, the surface of the ground. It consists of the fleshy bases of the future leaves; and new bulbs, called by gardeners, *cloves*, are formed in the *axillæ* of these, which by their growth destroy the parent bulb, and thus continue and multiply the species, since each of them is capable of producing a perfect plant.

Bulbs are of two kinds, the *tunicated*, consisting of concentrick rings, being the bases of the leaves quite surrounding the centre; *Ex.:* narcissus, onion, hyacinth, &c.

The other species of bulb consists of separate *imbricated* scales, each of which expands into a leaf; these, therefore, are not sheathing, as those of the other kind; *Ex.:* garlick, squill, lily, &c.

The progressive growth of these two species of bud, affords a valuable lesson in vegetable physiology; and most persons have the power of observing them in the hyacinth, &c., which are favourite flowers in our rooms.

Irregular or *accidental buds* are found in other parts of plants, besides the true ones in the axillæ of leaves: thus, in some species of garlick, they are produced in the place of flowers in the flower-bud.

Another kind of bud, resembling a bulb, is produced on the roots of some plants; and the spots, called eyes, in the potato, are rudimentary buds buried in the substance of this form of stem by its irregular growth.

Some plants produce a kind of bud in its usual situation, but this, instead of growing into a branch with leaves, falls off from the parent stem when it is perfected, and takes root in the ground like a seed; *Ex.:* coral-wort, bulbous fumitory, and several foreign lilies and aloes.

Some plants, as the marsh malaxis, the Bryophyllum, &c., produce accidental leaf-buds on the margins of their leaves.

The subject of buds will be further explained when the flower-bud is described.

It is found that the young leaves are constantly folded up in the bud in the same way in the same species of plants, and there are many different modes of this arrangement; this is termed the *vernation* or *foliation* of the plant.

OF HAIRS AND GLANDS.

The herbaceous parts of most plants have hairs on them in a greater or lesser degree; on some, as the marshmallow, the enchanters' nightshade, cabbage, &c., they are hardly perceivable.

Those plants, generally speaking, most abound with them, which grow on a dry soil, as common gromwell, bugloss, &c., or on high mountains, or those of hot climates.

On some plants they are long, but scattered; on others they are short and thick; on some, as the common borage, comfrey, viper's bugloss, &c., they are stiff, and on some common cudweeds and mulleins, they resemble cotton in appearance and touch.

They are found to be of very different forms when examined in a microscope.

The most curious example of hairs is shown on the cobweb houseleek, where they look as if spun from leaf to leaf like the web of the spider.

Physiologically considered, hairs are of two kinds:—

Those which are intended, apparently, to regulate the escape or evaporation of moisture from the surface of the plant, are called *lymphatick*, and are the most common; and for this reason, are very abundant on plants growing in exposed situations.

The other kind are called *secreting* hairs, and are a species of *glands* or receptacles of fluids, peculiar to certain plants, such as those of the common nettle, which, when touched, penetrate the skin, the pressure causing a colourless acrid juice, contained in a minute bag at their base, to be forced through them into the wound; it is this which produces the smarting pain.

The glands of plants are very various in appearance, form, and situation; their use and nature are not well understood.

In the myrtle, orange, St. John's wort, and many others, they appear as small transparent dots on the leaves, or other green parts, when these are held up to the light.

On the mossrose they are *secreting* hairs, with a little round, coloured globe at their points, and feel clammy.

The under-sides of the leaves of many plants are covered with very minute glands, like beads; these are seldom visible to the naked eye.

In short, their various forms can only be learnt by observation, and by consulting books on the subject.

It may be remarked, that the perfume of the flowers and leaves of plants arises from secretions from glands.

The thorns and prickles of plants are *hairs* grown thick and strong; but this is to be understood of such only as can be separated from the plant without laceration, as can be done with those of the stems of roses and briers, gooseberry-bushes, &c.

Those which cannot be so removed, owe their origin to other causes; of this latter kind are the spines of furze, blackthorn, and many others: most of these are produced from buds not developed in the usual manner.

NATURAL HISTORY.

THE TERRIER.—A Portrait.

Dogs of this breed are determined enemies of all species of vermin, foxes, weasels, rats, badgers, &c., and will attack them on all occasions; and as this dog will follow them into their subterraneous retreats, or *earths* (as they are called by sportsmen), to drive them out, he has derived his name from the Latin word which signifies *earth.* It is a fierce, bold, and hardy dog, and will attack even the badger without hesitation, although by no means a match for that powerful animal singly; yet some very strong, well-trained dogs, have been known to overcome even a badger.

Some terriers are smooth-haired; others are rough or wiry-haired; they are short-legged, not famous for speed, strongly bristled about the muzzle; it is generally attendant on packs of foxhounds, in order to assist in unearthing the fox.

The terrier is a teachable scholar in all sorts of tricks, either mischievous or amusing: the blind mendicant finds it a powerful auxiliary; by his canine attendant he is led safely from place to place, guided by the string which passes from his hand to the dog's neck; and as if the animal knew the wants, wishes, and design, of his master, and entered into a full feeling as to the means of their mutual support, he will endeavour to excite the attention of passers-by, sitting upright, and holding in his mouth with unweariable assiduity, a box, or some such contrivance, and bringing the donations of the charitable to his master with unimpeachable integrity.

The following anecdote, is related of the singular attachment and remembrance of the Russian Terrier :—

"Some years ago, the captain of a Russian vessel lying in Dublin harbour, used to frequent the Roscius Tavern, in Downes-street, accompanied by a dog of the terrier kind, which he had brought over with him.

"Being unexpectedly compelled to sail, the dog was left behind; and having diligently explored all the quays, even to the Pigeon-house, he returned to the Roscius, where he met Mr. Cornellys, the veteran comick actor, who received him with much humanity, and supplied his wants.

"Although very infirm, and nearly blind from age, and we perhaps may add, grief, the creature still made occasional visits to the quays, the decks, and Ringsend, and was a well-known passenger in the ferry-boats that used to ply at the latter place before the erection of the wooden bridges.

"The boatmen, being acquainted with his story, admitted him free; and it was truly affecting to behold his eager inquiries (as we may almost admit the term) after his beloved master!

"In this affectionate search he carefully examined all those places where it is supposed his master had occasionally stopped; and it is no less remarkable than true, that he appeared to distinguish the foreign vessels—always going on board and minutely inspecting them, particularly those from the Baltick, from Russia, Norway, Denmark, or Sweden, while he uniformly passed by our own, or those from Britain.

"The gratitude of the canine species is so frequently recorded, that we should not mention this amiable trait, as conspicuous in our present subject, did we not think that it deserves particular notice.

"Sensible of the obligation he owed Mr. Cornellys, he never met him but what he offered his paw for a friendly shake, and if it was not accepted, would neither eat nor drink, fearful that his benefactor might be displeased with him.

"When he went to the Roscius, and did not see Mr. Cornellys, he used to proceed to the Shakspeare in Cope-street, where he would await his coming; and at both those houses he used to be a frequent visiter. He was allowed by the best judges to be of a most valuable breed, and to have been a remarkably fine dog in the early part of his life.

"The poor fellow at length died without ever having the satisfaction of finding his lost and deeply-regretted master."

THE EAGLE.

The Falcon genus of birds forms a very extensive division of the diurnal birds of prey. Upwards of a hundred and fifty alleged species have been described; but of these many are very little known, and not a few of them are mere varieties resulting from age, sex, or climate. Few of the species assume the adult plumage until three or four years of age; and this circumstance alone has occasioned many mistakes which cannot be corrected until the law which regulates the chance of plumage in every instance has been ascertained. They are chiefly distinguished from the vulture tribe by having the neck and head-covered with feathers, and by the prominency of the eyebrows, which gives to the eyes a sunken appearance. The female is, in almost every instance, one third larger than the male.

In the present very unsatisfactory state of the divisions in this genus, we need only state that the eagles form a large section of the genus falcon, and include not only the largest species which belong to it, but the most powerful and courageous of the birds of prey. They have a very strong beak, which is of considerable length, straight at its base, and bent only towards the point. The legs are strong and covered with feathers, even to the ends of the toes, which are armed with powerful and very crooked claws.

We shall confine the remainder of our statement to the Great Eagle, under which term we shall consider that there are included the following, which by different naturalists have been set down as distinct species: the common eagle, the royal eagle, the golden eagle, the ring-tailed eagle, the white-tailed eagle, and the black eagle. Recent naturalists are disposed to consider that all these terms apply to the same bird under different circumstances. The male is about three feet long, and the female three feet and a half, the outstretched wings generally measuring between seven and eight feet; but these dimensions are sometimes exceeded. The female is not only larger, but in a state of freedom, appears to possess more courage and subtlety than the male.

In a clear sky, the great eagle soars to a vast height, but flies lower in cloudy weather. He rarely quits the mountain to descend into the plains; and whenever this does happen, it is generally in the winter season, as will appear from an examination of the dates at which eagles have been shot or captured in the plain country. His immense muscular power enables him to contend with the most violent winds. Ramond relates that, when he had reached the summit of Mount Perdu, the most elevated point of the Pyrenees, he saw no living creature but an eagle, which passed above him flying with inconceivable rapidity in direct opposition to a furious wind from the southwest. The flight of the great eagle is so high that the bird often ceases to be discernable by the human eye; but even at this distance its cry, which has been compared to the barking of a small dog, can still be heard; and such is the amazing acuteness of its own sight that, when too high in the air to be visible to man, it can mark out a hare or even a smaller animal that may be upon the ground, and darts down upon it with an unerring aim.

This bird, with its bold glance, proud air, elevated flight, and strength of limb, combined so many of the qualities which are commonly esteemed noble, that he was called by the ancients the "Celestial Bird;" and, in their mythology, was the messenger of Jupiter and the bearer of his thunderbolts. Its figure in gold or silver upon the end of a spear, was the military ensign of the Romans and Persians. Modern potentates have followed the example; and in heraldry, the figure of the eagle has been adopted as the emblem of power.

The great eagle, although nowhere a common bird, is very extensively diffused over the world, being found in the mountainous regions of Europe, in various parts of Asia, and in Africa, (at least in the Atlas chain, for the species which have been met with by travellers generally in that continent

EAGLE'S NEST.

have not been well defined); it is also found in North America, where, however, it is even more than ordinarily rare. It likewise appears in the mountains of Great Britain and Ireland, but not so commonly as supposed, because the ospray is often mistaken for it by common observers. It is of importance that when an eagle happens to be shot it should be examined by some neighbouring naturalist in order to determine the species.

Eagles cannot be tamed without great difficulty. European falconers stigmatized them as "ignoble" because they could not train them to assist in field-sports like the hawks, or "noble falcons." The Tartars, however, have been able to effect this; they take the eagles young, and train them to assist in the chase of hares, foxes, antelopes, and even wolves. Perhaps, however, the bird thus employed, which travellers call an eagle, is only a species of hawk, like the *cherkh*, which is similarly employed in Persia. A pamphlet was, some years ago, published by Professor Reisner of Germany, with the object of showing that eagles might be employed to direct balloons. He states the number of birds which would be necessary, according to the dimensions of the machine, and gives directions for the mode in which they should be harnessed, trained, and guided.

The following account of the eagle which was in the Garden of Plants, at Paris, in 1807, was copied from the French journals of the time into the "Annual Register" for that year, and may be suitably introduced in this place. "There has been for some time in the Garden of Plants, an eagle, which her majesty the Empress sent thither, and which is as much distinguished by his beauty as by a silver ring which he carries in one of his talons. It was originally domesticated with an English gamecock, which has at last served him for food. It is not known whether the death of the gamecock was produced by his own fierceness—by some movement of anger—or merely by the hunger of the eagle. The following is the history of the eagle since he lost his liberty. He was taken in the forest of Fontainbleau, in a trap set for foxes, the spring of which broke his claw. His cure was tedious, and attended by a painful operation, which was borne by the eagle with a patience not often exceeded in man. During the operation his head only was at liberty, and of this he did not avail himself to oppose the dressing of the wound, from which several splinters were taken, nor did he attempt to disturb the apparatus which the fractures required. Swathed in a napkin, and laid on one side, he has passed the entire night upon straw without the least motion. The next day, when all the bandages were unwrapped, he lodged himself upon a screen, where he remained twelve entire hours without once resting on his unsound foot. During all this time he made no attempt to escape, though the windows were open. Yet he rejected all nourishment until the thirteenth day of his captivity, when he tried his appetite upon a rabbit which had been given him. He seized it with his uninjured claw, and killed it with a stroke of his beak between the head and the first vertebra of the neck. After having devoured it, he resumed his usual place upon the screen, from whence he stirred no more until the twenty-first day after his accident. Then he began to try the wounded limb; and without in the least deranging the ligature by which it was bound, he has regained the use of it by moderate and reasonable exercise. This interesting creature has passed three months in the room of the servant who attended to him. As soon as the fire was lighted he came up to it, and suffered himself to be caressed; at bedtime he mounted his screen, as close as possible to the attendant's bed, but removed to the opposite extremity as soon as the lamp went out. Confidence in his own powers appeared to exempt him from any kind of distrust. It is impossible to show more resignation, more courage, and one might almost be tempted to say, more reason, than was exhibited by this eagle during the long continuance of his illness. He experiences no weakness from the accident which deprived him of his liberty."

The female lays two, and sometimes, but rarely, three eggs annually, on which she sits for thirty days. The nest, which is called an "eyry," is usually placed in the hollow or fissure of some high and abrupt rock, and is constructed with sticks of five or six feet in length, interlaced with pliant twigs, and covered with layers of rushes, heath, or moss. It has no hollow, like the nest of most other birds, but is properly a raised platform. Unless when accidentally destroyed, it is supposed to suffice, with occasional repairs, for the same couple during the whole period of their lives. Sometimes the platform-nest is thrown across, between the edge of the rock and any suitable trees that happen to be near it. A nest of this sort is thus described by Willughby:—"In the year of our Lord 1668, in the woodlands near the river Derwent, in the Peak of Derbyshire, was found an eagle's nest made of great sticks, resting on one end on the edge on a rock, the other on two birch-trees: upon which was a layer of rushes, and over them a layer of heath, and upon the heath rushes again, upon which lay a young one and an addle egg; and by them a lamb, a hare, and three heath-poults. The nest was about two yards square, and had no hollow in it."

It is commonly said that the mother eagle frequently destroys the most voracious of her brood. There does not, however, appear to be the least evidence for the truth of this assertion. It is true, that scarcely ever more than two eaglets, and frequently but one, are found in the nest; but, until we have better evidence on the subject we should in justice, attribute this rather to the infecundity of the eggs than to the barbarity of the mother. It is more certain that the parents will not allow their offspring to live in idleness longer than necessary; for as soon as they can fly they are driven from the eyry and left to shift for themselves. It is also observed that eagles are never disturbed by others of their kind in the continued occupation of the spot which they have fixed upon for their eyry. These circumstances are finely alluded to by Thomson in his "Spring."

> "High from the summit of a craggy cliff,
> Hung o'er the deep, such as amazing frowns
> On utmost Kilda's shore, whose lonely race
> Resign the setting sun to Indian worlds,
> The royal eagle draws his vigorous young,
> Strong pounced, and ardent with paternal fire.
> Now fit to raise a kingdom of their own,
> He drives them from his fort, the tow'ring seat,
> For ages, of his empire; which in peace,
> Unstain'd he holds, while many a league to sea
> He wings his course, and preys in distant isles."

CHYMISTRY.

CARBON.

Under the general name of carbon are included, common *charcoal*, *lampblack*, *ivory-black*, *anthracite*, or hard coal, *bituminous*, or soft coal, *plumbago*, or black lead, *diamond*, and some others.

When wood is heated in open air to a certain degree, it takes fire and burns; its carbon, uniting with the oxygen of the air, forms carbonick acid, while its hydrogen unites with oxygen and forms water; when the combustion has ceased, we find nothing remaining but a small quantity of earthy matter, called the ashes. But when wood is heated to redness in closed vessels, a large quantity of vapours is driven off, and a black, porous, brittle substance remains, called charcoal.

Charcoal from its extensive uses in the arts, and for domestick purposes, must necessarily be prepared by some cheap process; accordingly, the wood from which it is to be prepared is cut of the proper length and arranged in conical piles, which are covered by a thin stratum of earth, but leaving a few small openings at the sides and one at the top, where the *coal-pit*, as it is called, is lighted, and the slow combustion continues for about two weeks. There is sufficient air admitted to allow combustion to go on to such an extent as to drive off all the volatile matters, but not sufficient to consume much of the carbon. When the smoke ceases to issue from the openings the process is completed, and after being allowed to cool sufficiently, the coal is raked out and put up for the market.

Much charcoal is used for making gunpowder, and must be pure. For this purpose the wood is put into cast iron cylinders, which are closed from the air, except a small opening for the escape of vapours, and then heated to redness until no more vapours escape, when the cylinders are allowed to cool, and the charcoal is removed for use.

Properties of Charcoal. As thus prepared, charcoal is a brittle and tasteless substance, of an odour rather agreeable when newly prepared, but inodorous when it has been kept awhile. It is a poor conductor of heat, and on that account frequently used to cover ice in the summer; it is a good conductor of electricity, hence it is frequently used to imbed lightning-rods where they enter the ground.

Charcoal is remarkable for its power of absorbing different gases, and giving them off again when heated. It will absorb *ninety* times its bulk of ammonia, and about forty times its bulk of the exhilarating gas.

It has the property of removing odours, taste, and colours, especially animal and vegetable colours.

Thus, the most filthy water of the gutter, as well as meat that has become offensive from the long keeping, are rendered perfectly sweet by the contact of newly prepared charcoal. Ivory-black is generally recommended in the books for this purpose in preference to any other, but lampblack, when heated for a long time in close vessels, is equally as good, if not better.

Vegetable colours are quickly removed from liquids, by mixing with them pulverized charcoal. Heat to redness some ivory-black, and let it cool, keeping it in a close vessel, and then pour it into about twice its bulk of common vinegar, stir it thoroughly, and after letting it stand a few moments, pour the whole upon a paper filter supported on a glass funnel: the liquid will pass through colourless, into the glass below.

In consequence of the cleansing properties of charcoal, it forms one of the best dentifrices, but it is necessary that it be kept from the air. For this purpose, animal charcoal is preferable to any other.

Water casks which are used at sea, are charred on the inside, for the purpose of preserving the sweetness of the water; but the antiseptick or preserving power of the charcoal is soon lost, and it has been proposed by Professor Torrey to substitute for the charring of the casks, small bags of charcoal, which are to be suspended in the liquid until they have lost their antiseptick property, when their places can be supplied by fresh ones.

Charcoal is one of the most indestructible substances in nature. The ancients were aware of this property.

We accordingly find that wood that was to be preserved for many years, was charred. Thus the piles that were driven down at the founding of the temple of Ephesus, more than two thousand years ago, were recently removed and found to be charred, and in a good state of preservation, and the same remark is true of the piles on which the houses of ancient Venice were built.

Some charred stakes were removed from the bed of the Thames about forty years ago, supposed to have been driven down by the ancient Britons, to prevent the passage of Cæsar's army, during his invasion of Britain.

Grains of wheat and rye charred at Herculaneum, during the destruction of that city more than 1800 years ago, were recently discovered in a good state of preservation, and easily distinguished from each other.

Lampblack is another form of carbon generally prepared by burning rosin and refused turpentine, and allowing the smoke to pass up into chambers lined with sacking; where the soot is deposited and afterwards swept off and put up for sale, without further preparation.

Ivory-black, or bone-black, is often known under the name of *animal charcoal*.

It is prepared from the shavings and clippings of animal bones or ivory, as those from the button-mole makers, or from the bones themselves, by heating them in cast iron cylinders until all the volatile matters are expelled; the charred matter is then pulverized and put up for sale.

The uses of charcoal are numerous. It is an indispensable article in reducing the metals from their ores. United with iron, it forms steel—with nitre and sulphur, it forms gunpowder.

Lampblack enters into almost all the dark coloured paints; with linseed oil and spirits of turpentine, it forms printer's ink. The beautiful brown pigment, called *bistre*, is made by dissolving soot in water and evaporating it to dryness.

Animal charcoal is extensively used to whiten sirups by the sugar refiners, and for removing colour from various substances.

Anthracite, is a general name applied to all kinds of hard coal, such as the Lehigh, the Schuylkill, the Lackawana, Peach Orchard, &c. It is obtained from the earth where it forms immense masses, sometimes occupying extensive ranges of hills. It is composed of carbon containing from one tenth to one twentieth its weight of earthy matters.

Bituminous coal is a common appellation applied to the soft coals, such as the Liverpool, Nova Scotia, Virginia, &c. When heated to redness in cast iron vessels, it gives off large quantities of inflammable gas, which is used for lighting cities under the name of *coal gas*, leaving in the vessels a black, brittle and shining substance, called *coke*, which is used for fuel and consists of carbon, containing a very small portion of earthy matter.

Plumbago, more generally called *black lead*, is an abundant natural product, forming in some instances whole mountains. The purest kinds of this are carbon, generally containing from one to five per cent. of iron. It is extensively used in the manufacture of pencil leads and for burnishing stoves and other articles of iron.

The *Diamond* is pure carbon in a crystalline state, and is the rarest, the hardest, and most valuable substance in nature. It cannot be fused, though it may be burned when heated to a very high temperature in open air, and still more rapidly in pure oxygen gas. The product is pure carbonick acid.

Very large diamonds are exceedingly rare. The largest in the world belongs to the Rajah of Mattan, in the island of Borneo, for which the owner has refused $150,000 and two large brigs of war. Its size is about half as large as a common hen's egg.

Diamonds constitute a large proportion of what are called the jewels of kings and emperors. The uses of the diamond are chiefly for ornament and the cutting of glass.

Carbon combines with the oxygen of the air when burnt, forming two distinct compounds, called *carbonick oxyde* and *carbonick acid*; both of which are formed in ordinary combustion.

THE LOVE OF COUNTRY AND OF HOME.

BY MONTGOMERY.

THERE is a land, of every land the pride,
Beloved by heaven o'er all the world beside;
Where brighter suns dispense serener light,
And milder moons imparadise the night;
A land of beauty, virtue, valour, truth,
Time-tutored age, and love-exalted youth.

The wandering mariner, whose eye explores
The wealthiest isles, the most enchanting shores.
Views not a real so bountiful and fair,
Nor breathes the spirit of a purer air;
In every clime, the magnet of his soul,
Touched by remembrance, trembles to that pole;
For in this land of heaven's peculiar grace,
The heritage of nature's noblest race,
There is a spot of earth supremely blest,
A dearer, sweeter spot than all the rest,
Where man, creation's tyrant, casts aside
His sword and sceptre, pageantry and pride,
While, in his softened looks, benignly blend
The sire, the son, the husband, father, friend.

Here woman reigns; the mother, daughter, wife,
Strews with fresh flowers the narrow way of life
In the clear heaven of her delightful eye,
An angel-guard of loves and graces lie;
Around her knees domestick duties meet,
And fireside pleasures gambol at her feet.
Where shall that land, that spot of earth be found?
Art thou a man? a patriot? look around;
Oh! thou shalt find, howe'er thy footsteps roam,
That land thy country, and that spot thy home.

HISTORY.

AMERICA.

Of the four great quarters of the globe, the continent of America is the largest; and on that account, together with its late discovery, it has been denominated the new and western World. It extends from 55° 30′ south latitude, to 74° north, a length upwards of 9,000 miles; and its width, lying between 35° and 168° west longitude from Greenwich, where greatest, is 3,800 miles, the average breadth, however, is 1,500 miles. This vast tract of country occupies an area of 12,000,000 of square miles, and divides the Atlantick ocean from the Pacifick. Towards the north, its limits have been unexplored, though several attempts have been made by enterprising voyagers to overcome the perils of those icy regions.

Whether the continent of America were known to the ancients is a point quite undecided. At the revival of letters, it is certain, however, that the Canaries, or Fortunate islands, were believed to be the western limits of the world, and that, therefore, they entertained no idea of a country beyond it.

About the latter part of the fifteenth century, one Christopher Colomb, or, as he is now generally called, Christopher Columbus, a native of Genoa, conceived the idea of sailing to the East Indies across those unexplored seas that lay to the westward of the then known world; thus exhibiting a knowledge of the sphericity of the earth, far beyond the common opinion of the age in which he lived.

The success which attended Columbus, soon induced other adventurers to proceed to the new world, one of the first of whom was Amerigo Vespucci, a Florentine, who sailed with a squadron thither in 1499. He, however, added nothing new to the discoveries of his predecessor, but on his return home, published a lengthy account of the countries that had been visited; from which circumstance, he was reputed to be the discoverer, and the country was, in consequence, named, after him, *America*, an honour to which Columbus was much more justly entitled. In the next year the coast of Brazil was accidentally discovered by Alvarez de Cabral, a Portuguese admiral. In 1517, Hernandez Cordova was the first who sailed to the peninsula of Yucatan, which, to his astonishment, he found peopled with a race of brave and half-civilized natives. In the following year, Velasquez, the governor of Cuba, sent an armed force thither, and completed those discoveries which led to the conquest of Mexico a short time after, when the same Velasquez despatched Hernando Cortez to subdue it. From this period several years elapsed without any further progress being made in the discovery of North America. In 1524, Francis I. of France, sent one John Verrazani to America; but all he did was to traverse the coast from lat. 28° to 50° north. Subsequently, in 1525, Stephen Gomez, a Spaniard, sailed to Cuba and Florida, and thence northward to Cape Razo, in lat. 46° north. In 1534, a French fleet, under the command of Jacques Cartier, sailed to Newfoundland, and then proceeded northward, and entered a large, broad gulf. This happening on the day of the festival of St. Lawrence, Cartier named it the gulf of St. Lawrence, and to the river which runs into it, he also gave the same name. The country adjoining he called New France, as the Spaniards had denominated Mexico New Spain. In 1540, Cartier made a third voyage to Canada, and began the settlement of Charlebourg; but he soon broke this up, and sailed for Newfoundland. During the reign of Henry VIII., several attempts were made by the English to find out a northwest passage to the East Indies, but they were unsuccessful. In 1576, Captain Frobisher sailed thither; subsequently Sir Francis Drake; and next, Sir Humphrey Gilbert. This latter adventurer took formal possession of the continent of North America, in the name of the crown of England. In 1584, Sir Walter Raleigh sailed for North America, and where he landed he took possession of the adjacent country, and named it Virginia, in honour of his sovereign, Queen Elizabeth. Repeated attempts were made to establish a colony in this part of the continent, but they were all unsuccessful. In 1585, an expedition, commanded by Davis, arrived on the coast, from England, and discovered Davis's straits. In 1602, Bartholomew Gosnold, with thirty-two others, made a voyage to North Virginia, and in their passage discovered, and gave names to Cape Cod, Martha's Vineyard, and Elizabeth islands. In 1605, Captain Weymouth discovered George's islands, and Pentecost harbour. In 1606, James first divided Virginia into two colonies, the northern and the southern, and granted them to different companies. In 1607, M. de Champlain sailed up the St. Lawrence, and founded Quebec. In this year, also, the first permanent settlement was effected in Virginia, at Jamestown, which was the first English town established on the new continent. In 1609, an Englishman, named Henry Hudson, but in the service of the Dutch, discovered Hudson's river, whence its name. In 1614, Captain Smith explored the coast of Massachusetts, and southward of it; this country he termed New England, a name which has superseded that of North Virginia. In 1616, William Baffin discovered the great northern bay, which bears the name of Baffin's bay. In 1620, the first permanent settlement was made in New England, at Plymouth. In 1627, a colony of Swedes and Fins settled on the Delaware river. In the reign of Charles I., Lord Baltimore, a Roman Catholick, went over and settled at Maryland. Connecticut, and Rhode Island, were next settled from Massachusetts. In 1669, the settlement of the Carolinas began. In 1682, William Penn, with a colony of Quakers, arrived in Pennsylvania. In the beginning of the next century, Louisiana was colonized by the French; and in 1732, a settlement in Georgia was effected by General Oglethorpe.

As relates to the northeastern coasts of America, many attempts have been lately made by experienced and enterprising individuals to add to the stock of information already acquired respecting them; among them we have the names of Cook, Clarke, Meares, Vancouver, Beering, Tshirikow, Hearne, and Mackenzie. Subsequent to these voyagers, there have been Seoresby; Ross, who in 1818 reached to 78° north latitude; Parry, who in 1819 went further north than any preceding navigator; he undertook another voyage in 1821, with Captain Lyon, and a third in 1824. In 1820, a land expedition was attempted by Lieutenant Franklin and Dr. Richardson, and also a second one, by the same parties, in 1825.

In this last, Captain Beechey proceeded to Beering's straits, to meet them, but without effecting his purpose. In 1827, Captain Parry made another expedition, and went as far north as 82° 40′. Lastly, in 1829, Captain Ross departed thither on a private expedition, and has just returned. Thus have all the attempts that have been made to pass around the north of America proved ineffectual; and, from the severity of the weather, and the immense mountains and plains of ice, particularly dangerous.

The southern boundary of this country is altogether as certain, as its northern limit is obscure, being confined to a point of land, called Cape Horn. By a narrow neck of land in the centre of America, and in lat. 8° north, called the isthmus of Darien, or Panama, this vast continent is divided into two parts, the one termed North America, and the other South America.

NORTH AMERICA.

North America comprises all the country lying north of the isthmus of Darien, in lat. 8°; and extends from Davis's straits on the one side, to Beering's straits on the other. Its length, from northeast to southwest, is 5,000 miles; and its greatest width, from east to west, 3,800. It is bounded on the north by the Arctick ocean, and Baffin's bay; on the south, by the isthmus of Darien; on the east, by the Atlantick ocean; and on the west, by the Pacifick.

The principal rivers of North America are the Mississippi, Missouri, St. Lawrence, Columbia, Mackenzie's, Severn, and the Rio del Norte.

The principal gulfs are those of St. Lawrence, Mexico, and California. The bays are those of Honduras, Baffin's, and Hudson's.

The principal mountains are Auhuack, and Sierra Madre, in Mexico; the Rocky, the Ozark, in Arkansas and Missouri; the Allegany, and the White mountains.

The principal lakes of North America, which are the largest collections of fresh water in the whole world, and besides being navigable for large ships, are subject to storms as violent as those on the ocean, are lakes Superiour, Huron, Michigan, Erie, Ontario, Winnipeg, lake of the Hills, Slave lake, and Great Bear lake.

The islands of North America are the West Indies, situated between North and South America; the Bermuda isles, Newfoundland, the Alleutian islands, and several in the Gulf of Mexico, and along the coast.

At the time when Columbus discovered this new world, it was very thinly peopled by an uncultivated race of men, divided into numerous tribes and nations. The northern regions, from Labrador to Beering's straits, were inhabited by a distinct savage race, called Esquimaux. Since that period, many settlements of Europeans have been made, which have rapidly increased in numbers, and their descendants now occupy a great part of the continent, and form the greatest portion of the present population. Several of the native tribes, who are called Indians, have become extinct, and their present numbers, in North and South America, are estimated by Baron Humboldt at 8,610,000. The colonies of the Europeans that occupied the eastern coasts of North America chiefly belonged to England, and were subject to the laws of the British parliament; but in 1764, that power imposed on the American states a tax, which was without their own consent, and not immediately applicable to the wants or necessities of the colonists. This was no sooner promulgated to the people, than it was met with great indignation, and even with defence. This act in consequence, was soon repealed, but the seeds of disaffection were sown from the very hour of its imposition, and a constant state of agitation was kept up for ten years, when it broke out into open warfare. After many severe and desperate engagements, which generally proved of advantage to the Americans, who, indeed, were assisted by the French, the contest ended by the peace of Versailles, which was ratified, and concluded September 3d, 1783, and by which the thirteen united colonies of America were admitted to be "free, sovereign, and independent states."

The present political divisions, therefore, of North America, are, the United States, Colonies of Great Britain, Russian Possessions, Central Republicks, and Mexico.

UNITED STATES OF AMERICA.

The United States extend from 23° to 49° north latitude, and from 60° 50′ to 124° 25′ west longitude; the length of this tract of country is about 2,850 miles, and its breadth about 1,380. It is bounded on the north by the British and Russian possessions; on the east by the Atlantick ocean; on the west by the Pacifick; and on the south by Mexico. The climate is very temperate, but the northern parts the winters are severe; generally speaking the temperature of the country is colder than that of the same latitudes in Europe, and about equal to that of latitudes ten degrees further north. The soil in general, is productive, and on the banks of the Mississippi very exuberant.

The principal rivers of the United States are the Mississippi, Missouri, Ohio, Arkansas, La Plata, Red river, Tennessee, Cumberland, Columbia, Mobile, Appalachicola, Connecticut, Hudson, Potomack, James, and the Savannah.

The Lakes are Superiour, which is 340 miles long, and 150 broad; Michigan, of the same length, and 75 miles in breadth; Huron, 240 miles long, and 150 broad; Erie, 200 miles long and 60 broad; the last are 512 feet above the level of the sea, and connected with each other by navigable channels. Between lakes Superiour and Huron, there is a fall of twenty-three feet; but the waters of these lakes, and several smaller ones, fall 320 feet into lake Ontario. The cataract of Niagara, where these waters pass over a perpendicular descent of 160 feet, is a remarkable natural curiosity, and is viewed with admiration by travellers from all parts of the world. Lake Ontario is 150 miles long. Champlain, Winnipiseogee, Sunapee, and Moosehead, are smaller lakes.

The principal mountains are the Rocky mountains, the Ozark, the White, and the Allegany. The greatest elevation of the Rocky mountains is 12,500 feet.

(To be continued.)

The praise of the *envious* is far less creditable than their *censure;* they praise only that which they can surpass, but that which surpasses them—they censure.

PHYSICAL GEOGRAPHY.

Of Waters in Relation to their Chymical Nature.

Fresh water, it is estimated generally, holds in solution $\frac{1}{30}$ of its weight of air. The good quality of fresh water consists in being completely saturated with oxygen, which must be frequently renewed by the running and agitation of the water. Its bad quality arises from the alteration or superabundance of oxygen; and each of these states indicates the presence of a heterogeneous substance in water, capable of absorbing more oxygen or of altering it. These substances are earthy salts, lime, gravel, and mud.

The waters of marshes, pools, and all those which stagnate on the ground, are unwholesome; they dissolve azotick and hydrogen gases, arising from the decomposition of plants, insects and fishes. They who live near marshes, and drink the waters, are generally afflicted with weak constitutions and premature age.

Stagnant waters absorb a great quantity of fixed air, or carbonick acid gas.

The water of hills and mountains, differs in its quality, according as it filters through banks of pure rock, of schist, of quartz, or of sand, from all which substances it can scarcely derive any property whatever; or, as it flows over beds of potter's earth, which it neither draws along with it nor dissolves;—or, lastly, as it traverses ground which is calcareous, marly, gypseous, impregnated with magnesia, salt, or bitumen. Waters of the kind last-mentioned are always very much mixed with heterogeneous substances, and generally hard, turbid, and unwholesome. Those waters which have clayey bottoms are the most common; they unite those qualities which are essential to salubrity. Those which flow from the hard rock are still more pure and limpid.

The waters of lakes, being derived from springs and rivers, generally partake of their different characters.

The waters of rivers contain some very heterogeneous elements, which seem necessarily to counteract each other; and it is, perhaps, owing to this, as well as continued motion, that river water is so generally serviceable.

Still water, by remaining too long motionless, frequently acquires the bad qualities of stagnant pools.

Seawater generally acts as an emetick, but the inhabitants of some of the islands of the Pacifick make it a common beverage.

Rainwater collected in clean vessels in the country, or freshly fallen snow when melted, affords the purest kind of water which can be procured without having recourse to distillation. The water obtained in this way, however, is not absolutely pure, but contains a portion of carbonick acid and air, absorbed from the atmosphere. This air is rich in oxygen.

Mineral waters may be arranged in the six divisions of acidulous, alkaline, chalybeate, sulphurous, saline, and silicious springs.

Acidulous springs commonly owe their acidity to the presence of free carbonick acid, in consequence of the escape of which, they sparkle when poured from one vessel into another.

Alkaline waters are such as contain a free or carbonated alkali, and consequently, either in their natural state, or when concentrated by evaporation, possess an alkaline reaction. These springs contain carbonate of soda and carbonick acid, and are almost entirely free from earthy substances.

The chalybeate waters are characterized by a strong, styptick, inky taste, and by striking a black colour with the infusion of gallnuts.

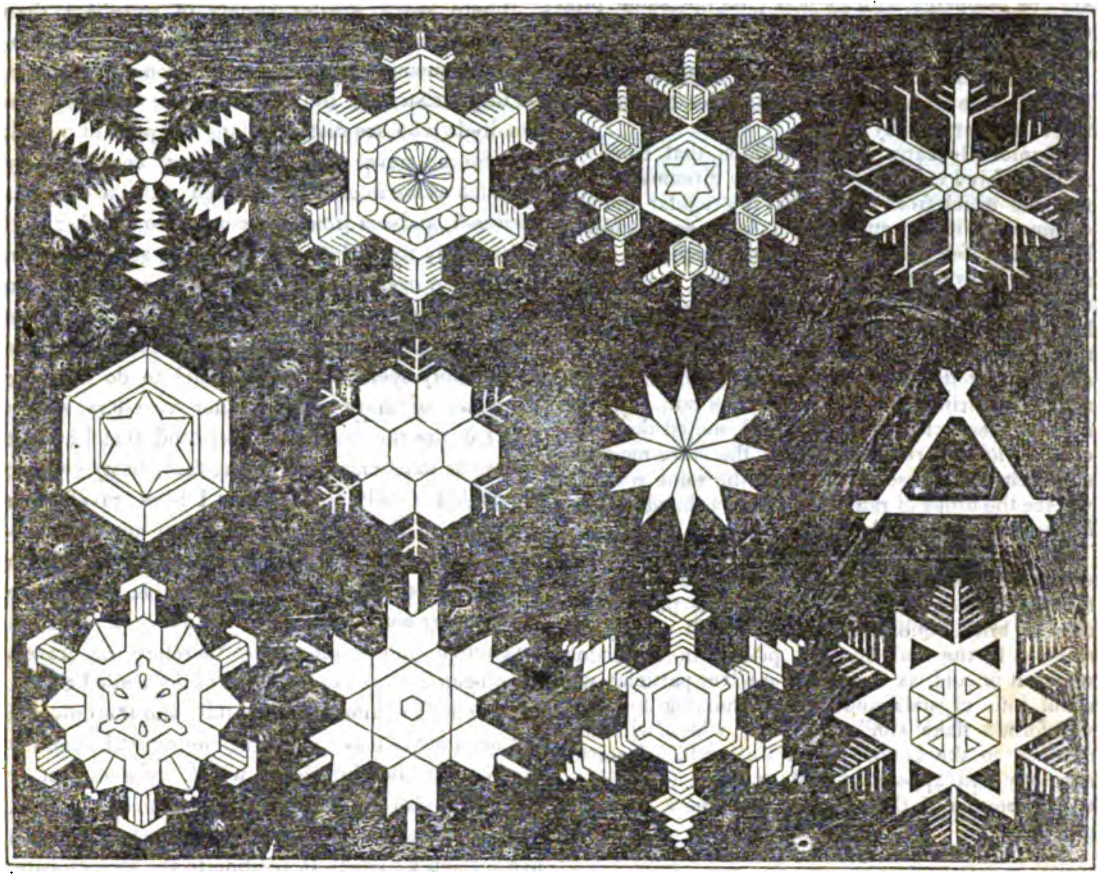
The sulphurous waters, contain sulphuretted hydrogen, and are easily recognised by their odour, and by causing a brown precipitate, with a salt of lead or silver.

Saline springs most frequently contain the sulphates, muriates, and carbonates of lime, magnesia, and soda. Potassa sometimes exists in them. Seawater may be regarded as one of the saline mineral waters. Its taste is disagreeably bitter and salt. The water of the Dead sea is very strongly impregnated with salt; it contains about one fourth of its weight of solid matter.

Silicious waters are very rare, and in those hitherto discovered the silica appears to have been destroyed by means of soda. The most remarkable of these are the boiling springs of the Geyser, which rise up in the form of a pyramid of water and foam, more than one hundred feet high. This phenomenon may be attributed to subterranean volcanoes, beds of burning coal, or to the decomposition and combustion of the pyrites over which the waters pass.

There are some waters which are capable of taking fire without being hot. There are several springs in Europe which may be set on fire; they are supposed to be mixed with bitumen, or to contain inflammable or hydrogen gas. Several springs in the Allegany mountains, emit an inflammable gas, which takes fire by bringing a flame near the surface. Springs impregnated with bitumen, which floats in large quantities on the surface, are also found along the Allegany river. They are probably connected with the coal mines

SNOW.



APPEARANCE OF SNOW CRYSTALS AS SEEN THROUGH A MICROSCOPE.

When we reflect upon the various changes of the seasons, and the curious phenomena peculiar to each, we cannot but be struck with astonishment at the beautiful variety of our own climate; spring, summer, autumn, and winter, following in a beautiful succession; the present, always rendering the future season more delightful, by the contrast of its variety.

Winter has now succeeded to a mild and delightful autumn, the flowers of the summer are gone, the trees have lost their foliage, and the various feathered inhabitants, requiring a warmer clime, have migrated southwardly, while a fresh arrival of wild fowl, and other birds of the north, bespeaks the approaching cold.

Nature has now shifted her scenery; snow falls, and, like magick, the face of the country is completely metamorphosed; the hills, the valleys, and the woodlands, the rich pastures and meadows, the cottages and the farmhouses, are all clothed in the white garments of winter, and present a uniform but beautiful appearance; while the heath blazing on the humble cottage hearth, or the more substantial log or fagot of the farmhouse fireside, with the mistletoe hanging above, bring together the association of ideas of Old England, "Roast beef, plum-pudding, and a merry Christmas;" and without, the dark smoke curling perpendicularly in the clear, frosty atmosphere, from the white chimneys of the well-thatched cottage, gives an idea of the real English comfort enjoyed by our rural population.

As snow is the agent by which this extraordinary scenick effect is produced, it may not be uninteresting to our readers, while sitting round their fireside, and contemplating it without, to consider its nature and uses.

Snow is formed by vapours freezing in the atmosphere. It is not like hail or hoar frost; for on examining a flake of snow by means of a magnifying glass, it appears crystallized, while they are not, and the whole flake appears to be formed of shining spicula diverging from a centre. Dr. Grew, in speaking of snow, observes, that many parts are of a regular figure, like stars with six points, and are as much ice as the water we see frozen. Upon each of these points are others, at the same angles as the main points, among which are irregular broken points and fragments of the regular ones. Some flakes appear to have been thawed and frozen again into irregular clusters, and it would seem that snow is an infinite mass of icicles of regular form, but infinitely diversified. A cloud of vapour being gathered into drops, the drops descend, and in descending, pass through a colder region, and each drop is frozen into an icicle, shooting itself forth into several points; then continuing to descend, meet with some currents of warmer air, or in being wafted to and fro, and touching each other, some are thawed and blunted, again frozen into clusters, and entangled together so as to fall down in the form of what we call *flakes*. The *lightness* of snow, although it is really ice, is the consequence of the extent of its surface compared with its bulk; on the same principle that gold may be spread out till it will float upon a mere breath of air.

The *whiteness* of snow is owing to the very small particles into which it is divided; if ice be pounded, it will appear equally white.

Signior Beccaria was of opinion, that clouds of snow differed only from rain in the circumstance of the cold which froze them; that the regular diffusion of snow and its structure (particularly some snow or hail which fell about Turin, and which he called *rosette*) showed that clouds of snow were acted upon by some uniform cause, like electricity, which he endeavoured to explain. He was confirmed in this conjecture, by observing that his apparatus for ascertaining the electricity of the atmosphere, was always electrified by snow as well as rain. A more intense electricity, he conjectured, united the particles of hail more closely than the more moderate electricity did those of snow, in the same way that we see the drops of rain falling from a thunder-cloud. *larger* than those of ordinary rain.

An artificial snow may be made by placing a tall vial of aquafortis near the fire till it is warm, and filings of silver, a few at a time, being put into it; after a brisk ebullition, the silver will slowly dissolve. If the vial be then placed in a window where it is cold, as it cools, the silver particles will shoot into crystals, and several running together, will form a flake similar to snow, which will then descend to the bottom of the vial; while descending, they will appear like silver snow, and will lie at the bottom of the vial like real snow upon the ground.

We will now consider the uses of snow; for in common with every other phenomenon in nature, when understood, it is found to be of real utility to man. Experience proves that snow is very beneficial to the nourishment of the earth; particularly in the colder regions, where the ground is covered with it for several months, and where it serves to guard the corn and vegetation from the intense cold and piercing winds. The internal portion of the earth, on what principle is not well understood, is uniformly heated to the 48th degree of Fahrenheit. In this heat the vegetable juices will not freeze, and to them it is conducted when the cold is greater on the surface than they can bear. Different vegetables will bear different degrees of heat and cold; but too intense cold at the roots destroys all vegetation. Providence therefore provides that, when the cold on the surface is *so great* as to injure vegetation, *that cold*, which renders the rain unnecessary, and would of itself destroy vegetable life, is made the *instrument* of preserving it; for it freezes the rain, which falling on the ground in the shape of snow, preserves the interiour warmth of the earth, supplies sufficient moisture if needed, and becomes a beautiful and ingenious covering for the preservation of vegetation during the inclement season of the year. Can any thing be more demonstrative of the superintending providence of the Creator, or of the beneficent design influencing every principle in the universe? Guide to Knowledge.

Marriage is a feast where the *grace* is sometimes better than *the dinner*.

RAMBLINGS IN WINTER.—No. I.

There are a greater variety of travellers, than modes of travelling, and more modes than seasons. Sterne enumerated and described some of the first, as they existed in the last century; but there are hundreds who are distinguishing the present period, that Sterne never had the fortune to know. They are such as are intolerably infected with the *cacoethes scribendi*, and run from one country to another, and particularly from Europe to America, and *vice versa*, and hasten over a few hundred miles as if they bore a message for his satanick majesty, and hurry home again to scribble a book about the wonders they have so suddenly seen. I have nothing to do with the character of these or any other travellers, except that I desire the reader to understand that I am not ambitious to be classified among those hasty gentry; although I frankly confess, that I have travelled as much out of the *besoin de voyager*, as any other impulsion or motive. Again, in opposition to common practice, I esteemed it of considerable importance to pass over some portions of my native land, before I ventured into another; and therefore, my travels have been confined to the limits of the United States. My forehead exhibits locality, full; and the crown of my head bears that conclusive index that I shall eat my bread in two kingdoms, which the grandmother so early discovers. But I dread confusion of face, and should terribly dislike to be exposed to inquiries in a foreign kingdom, in relation to the soil, climate, manners, or institutions of America, which I, an American citizen, could not answer or elucidate. To fear and pride, therefore, am I indebted for the virtue of a short pilgrimage, by land and water, concerning which, I am unexpectedly undertaking to furnish a few general particulars.

There are usually sixteen modes of travelling—my remark is confined to the Union—to wit: by steam-boat, by sailing vessels, by batteaux, by canal-boats, by rafts, and by canoes, upon the water; and by stages, by rail-roads, by wagons, coaches, and sleighs, on horseback, by velocipedes, on stilts, and on foot, upon land; and by balloons through the atmosphere. Each mode has its peculiar advantages, and each again, its various subdivisions with their individual merits; and any one of them may be adopted to accommodate the character, mood, habit, or kind of traveller. The subdivisions are more numerous than the general denominations would seem to indicate. Steam-boats, for example, are of several kinds, viz.: large and small, with one and two engines, tow-boats, and passenger-boats. Sailing vessels may be divided into ships, brigs, schooners, sloops, cutters, scows, fishing-smacks and skiffs. Batteaux are constructed in various ways, and there are three kinds of canal-boats, viz.: packet-boats to carry passengers, line-boats for merchandise, and scows for stone, earth, lumber, &c. Rafts may be made of logs, of boards and plank, or of slabs and brush. Canoes are cut out of a log, or made of green hides or birch bark. The term *stages* is associated with a concatenation of calamities, inconveniences and horrours, almost too insupportable to be spoken of. A stage is a heavy, foul, unwieldy coach, generally drawn by four jaded horses, urged along by a vulgar, profane, and insolent driver. There are some exceptions; some drivers are respectable, some stages are lumber-wagons, and in winter, when the snow is sufficiently deep, sleighs are used. They are usually, however, associated with bad roads and manifold horrours, and are very favourable to the nurture of spleen. Rail-roads are of two kinds. In some, the rails are laid longitudinally, and the upper surface being sheathed with iron, are adapted to the wheels of cars which are impelled over them with great rapidity. In others, the rails are rough, unhewn, and placed crosswise the road, for the purpose of enabling horses and wheels to avoid sinking into the mire; they are used in marshy places. Both kinds, however, greatly facilitate transition.

As to wagons, coaches, and sleighs, those technicalities include an almost innumerable variety of vehicles. There is the heavy Pennsylvania wagon, drawn by six horses, guided by one line, then the lumber wagon, the pleasure wagon, the *little* wagon, the baggage wagon, and the pedler's wagon. Coaches differ chiefly in their circumferences and diameters, and the relations which their bodies and wheels sustain to each other. For instance, some coach-bodies are above the axletrees, others below, some are poised upon thorough-braces, others upon cross-springs, and not unfrequently upon cross *rails*. In 1601, coaches were prohibited in England, because they were considered effeminate.

There are many vehicles comprised under the very indefinite denomination of *carriages*, which I have not thought proper to classify in distinct orders. They partake of the nature of both wagons and coaches, and frequently bear the same relation to both, that the vegetable-insect, we some time since described, does to the animal and vegetable kingdoms. It will be readily perceived by the enlightened reader, that I allude to those locomotives usually denominated chariots, phaetons, barouches, buggies, chaises, gigs, sulkeys, &c. These are by no means publick conveyances, but they are found in the employ of private gentlemen, and are kept at liveries, for the accommodation of pleasure parties, and of people who have been miscarried or are benighted.

Sleighs, in a country where knowledge is so universally dissemminated, must be widely known. In no civilized community, where there is a wholesome association of the sexes, is an individual to be found whose heart is not animated at the mere mention of these indispensable luxuries of a snowy winter. I know of no situation in travelling in which a gentleman is apt to feel so amiable, as when he is nicely esconced in firs, in a fair sleigh, a pretty country-cousin at his side, and a fast horse and merry bells ahead. His heart expands, and every beat harmonizes with the fast and merry bells; he loves every circumstance about him, and blesses even the wintry storm. But precisely such enviable circumstances are not the boon of ordinary travellers; they are more peculiarly the pleasures of the home and the town.

The traveller must commonly content himself with the comforts appertaining to a stage sleigh, a lumber sleigh, a cutter, a wood sleigh, a sled, or a jumper. By the solitary traveller, the jumper, in my humble opinion, is to be preferred over all manner of sliding vehicles. It is easily constructed and conveniently disposed of; it consists chiefly of two poles which should be tough and pliable, placed about three feet apart and parallel with each other, with *uprights* at one end supporting, a crate comfortably filled with hay or straw, and pegs at the other to fasten them to the harness. In this article, the traveller moves on, enjoying a reasonable portion of the pleasures of sleigh-riding, without fear of detriment from man, beast, storm, or snow-bank.

Sir Walter asserts, that Dr. Johnson's chaise-driving, in point of pleasure, must yield the palm to pedestrianism. Coming now to speak of travelling on horseback, I beg leave to interpose *that* method of transition, as a substitute, superiour, in every important respect, to both pedestrianism and chaise-riding. Dr. Johnson was decided in his preference, but Sir Walter was merely of opinion that pedestrianism was superiour to chaise-riding, not intimating however, but that riding on horseback might be preferable to both.

A horse, seventeen hands high, sagacious, spirited, free and easy, with a soft saddle and a firm rein, is just the thing, above all others, that I should first select for travelling purposes. There is something *du militaire* in a gentleman upon horseback; he is above-ground, dry-shod, independent, ready for high deeds and daring purposes. There are no incumbrances upon him, or about him; if he meets a bridgeless stream, he swims it; if a stump, or a hole, he goes around it; if a log, or a fence, he jumps it; in fine, he rides when he pleases, and where he pleases, and without danger; he stops without trouble, and lastly, though not leastly, he travels at a trifling expense. Besides, it is a wholesome exercise; it invigorates the spirits, clarifies the mind, and purifies the body. The muscles become full and strong, the limbs round and substantial, the appetite is excellent, the digestion perfect, and the blood is driven briskly and freely through every part of the system.

Again, riding upon horseback is by no means unfavourable to the cultivation of the social powers. The feelings partake of the general stir and animation of the system; and when two travellers happen to jog along together, an unusual conversation is speedily elicited—their sympathies unite, and their casual acquaintance very soon ripens into a permanent friendship. If you choose to annex a pillion to the houss of the saddle, you may accommodate a female companion. And he who can appreciate the value of female society, will find this the grand climax of pleasurable travelling. It is most opportune for those labial contactions which are such notable auxiliaries of love and courtship, and therefore very favourable to the prosecution of the latter. Distance, also, is annihilated, and difficulties surmounted in this manner, with remarkable facility. Again, therefore, I repeat, that all modes of transition upon land must yield the palm to that of riding upon horseback.

Velocipedes are so little used, that they scarce deserve a mention. They consist of two wheels, one following the other, and connected by a shaft, which the traveller strides. He propels the vehicle by moving his legs, much after the manner of walking, and touching his toes to the earth at every pace. The machine is most valuable in going down hill.

Stilts are long poles fastened to the feet and legs, by which a man is raised from three to ten feet above the ground. A person skilled in the use of them, may walk with great rapidity. In this country, they are used chiefly in fording streams. If one of them breaks, or the individual loses his balance, they become mighty inconvenient appendages to the nether extremities.

Travelling upon foot, is, upon the whole, the surest and the safest method. There is no boiler to burst and scald you to death—no vessel to sink you to the bottom of the waters—no carriage to turn you over at the imminent hazard of your neck—no driver or proprietor to insult you—no toll-gatherer to stop you—no horse to run away with you and break your bones. You are entitled to the space you fill, whether it be upon the surface, or under the sod—you can stand up or lie down—climb over, creep under, or circumvent—in fine, you are free and independent. There is this disadvantage, however, which though small, is still a disadvantage. You move intolerably slow, and are inevitably inclined to get leg-weary in the long run.

Balloons pass more rapidly in a strong wind, than any thing I have seen, except it be mere *streams*. Some pretend, that they have travelled in a balloon at a rate which would have carried them round the world in a fortnight. I cannot think, that such a rapid passage is so wholesome as travelling upon horseback. In a hurricane, balloons are *too swift*. They are constructed of oiled or varnished silk, covered with a netting of twine, and inflated with hydrogen gas. The secret of their buoyancy is, they are lighter than the air. It is necessary to observe great care in making use of balloons, to avoid electricity and *trees*—the first explodes the hydrogen, and the second rends the netting and silk—in either of which events, a downward tendency is created, which is manifestly unfavourable to repose. The continual propinquity to this awful danger, is the great objection against travelling in balloons, under the present discipline thereof.

Of these sixteen modes of travelling, the reader may gather that I am partial to the back of a horse.

MISERIES OF A BACHELOR'S LIFE.

Poor fellow! he returns to his lodgings; there may be every thing he can desire, in the shape of mere external comforts, provided for him by the official zeal of his housekeeper; but still the room has an air of chilling vacancy; the very atmosphere of the apartment has a dim, uninhabited appearance; the chairs, set round with provoking neatness, look reproachfully useless and unoccupied—and the tables and other furniture shine with impertinent and futile brightness. All is dreary and repelling. No gentle face welcomes his arrival—no loving hand meets his—no kind looks answers the listless gaze he throws round the apartment as he enters. He sits to a book—alone; there is no one by his side to enjoy with him the favourite passage—the apt remark—the just criticism; no eyes in which to read his own feelings; his own tastes are unappreciated and unreflected; he has no resource but himself—no one to look up to but himself; all his enjoyment, all his happiness, must emanate from himself. He flings down the volume in despair; buries his face in his hands, and sighs aloud, *O! me miserum!*

DELIGHTS OF A MARRIED MAN'S LIFE.

Behold him! all the while he is busied about his daily occupation, his thoughts are wandering towards the time of going "home" in the evening, after the toils and fatigues of the day. He knows that, on his return, he shall find an affectionate face to welcome him—a warm snug room—a bright fire—a clean hearth—the tea-thing laid—the sofa wheeled round on the rug—and, in a few minutes after his entrance, his wife sitting by his side, consoling him in his vexations, aiding him in his plans for the future, or participating in his joys, and smiling upon him for the good news he may have brought home; his children climbing on the cushion at his feet, leaning over his knees to eye his face with joyous eagerness that they may coaxingly win him. This is the acme of happiness!

THE RUINS IN NEW YORK FIFTEEN DAYS AFTER THE FIRE.

You stand in the midst of upwards of twenty acres of smouldering ruins. The cellars of those immense storehouses are glowing still with the living embers. The hundreds of busy workmen, yet only rake open the cinders by day, that the air may fan them into a flame by night.

The evening scene fills you with singular emotions. It requires but a slight stretch of the imagination, to feel as though you were in the vicinity of Pompeii, with Vesuvius sending up its lurid glare close at hand, throwing a melancholy light over the deserted ruins. Just here rises a large and ragged pile, where the corners of four stately buildings still stand up by mutual support; there towers alone a single chimney; here stands the fragment of a wall; yonder the front of half a block, the windows gone, reminding you, in the dim distance of the vacant ruins of a castle; in the midst you observe some half a dozen granite pillars, standing as though they were grim and solitary sentinels, stationed there to frighten the plunderer from the desolated scene. But yonder, mark the grandest ruin of them all! The Exchange, with its huge pillars rent and torn from top to bottom, and the massy architrave still tottering upon their capitals; this is like the antiquated temples of Palmyra and of Carthage!

The day-scene, although it still inspires a melancholy gloom, is rapidly yielding to a gratifying change: every spot is enlivened by the busy workmen, the rubbish is fast disappearing, and order is taking the place of confusion. In some places the foundations of a new edifice are already laid; but in others, large quantities of merchandise are yet unrescued from the ruins, and crowds of poor people may be observed, standing about, watching and waiting for their portion of the salvage.

But the whole scene will speedily change; those splendid edifices, whose ashes you now behold, will have given place to others still more noble—business will have resumed its accustomed channels—and the sufferers, although they will never forget the calamity, still will have recovered from its effects.

STUDY OF THE LAW.

Attorney General Butler has proposed a plan to the New York University, for the organization of a Law Class, and a course of legal studies in that institution, which will probably be adopted in the course of the year, and himself placed at the head of it.

He proposes to have three classes, each of which will pursue a distinct and systematized course of studies, and attend at the same time to a parallel course of law lectures.

The first class will be taught, The Organization of Courts—Duties in an Attorney's Office—Practice and Pleading. Collaterally, they will attend a course lectures on the Law of Nature—the Divine Law, and the Law of Nations, &c.

The second class will study the Domestick Relations—the Law of Personalty, &c., and attend lectures on Constitutional Law—the Interpretation of Statutes, &c.

The senior class will learn the Law of Real Property—Law of Corporations—Law of Equity, &c., and they will hear lectures upon the Civil and Roman Law—Forensick Duties—Professional Ethicks, &c.

The lectures will be of a familiar and conversational character, which the student will be fully able to understand—and are intended to give him an opportunity to converse upon, review and criticise the studies he may be pursuing.

The plan is deservedly popular, and with Mr. Butler to carry it into execution, will unquestionably be successfully prosecuted.

We rejoice that this mode of lecturing is to be adopted.

THE ABYSSINIANS.

There is perhaps no nation, (says the Boston Mercantile Journal,) the character and manners of whose inhabitants are more disgusting to a civilized being than Abyssinia. The instances given by Bruce, of their cruelty and ferocity, were believed to have been much exaggerated, if not entirely fabulous, until subsequent travellers confirmed his statements. They seem to delight in cruelty—and their daily banquets are disgraced by the protracted torture of the unhappy animal, which is destined to be the victim of their unnatural luxury. —The following is a description of one of those unusual festivals, given in the words of Bruce, who was often compelled to be present at them:—

"A long table is set in the middle of a large room, and benches beside for a number of guests who are invited. A cow or bull, one or more, as the company is numerous, is brought close to the door, with his feet strongly tied. The skin that hangs down under the chin and throat, which is called the dewlap in England, is cut only so deep as to arrive at the fat, of which it totally consists, and by the separation of a few small blood vessels, six or seven drops of blood only fall to the ground. They have a stone bench, or altar, on which these cruel assassins lay the animal's head in this operation. Having thus satisfied the Mosaical law, by pouring these six or seven drops of blood on the ground, two or more of them fall to work—on the back of the beast, and on each side of the spine, they cut skin deep; then, putting their fingers between the flesh and the skin, they begin to strip the hide of the animal half way down his ribs, and so on to the buttock, cutting the skin, wherever it hinders them commodiously to strip the poor animal bare. All the flesh on the buttocks is then cut off, and in solid square pieces without bones, or much effusion of blood, and the prodigious bellowing which the poor animal makes, is the signal for the party to sit down at the table."

A people of such unexampled cruelty towads brute animals, cannot be expected to pay much regard to the sufferings of their fellow creatures. Inured to blood, and scenes of barbarity from their infancy, murder seems almost a pastime. Their sanguinary laws are but a weak restraint against their violent passions, and the punishments annexed to the laws themselves, exhibit the most striking examples of natural cruelty. One of their punishments is *slaying alive;* and criminals are frequently hewn in pieces with a sabre. The executioners are often men of quality, or officers of rank. Mr. Bruce relates, that happening one day to pass an officer who had three men to despatch with a sabre, he was coolly requested by him to stop till he had cut them to pieces, as he wished to converse with him upon an affair of consequence. A civilized man sickens with horror at such recitals, and he can hardly believe that he partakes of the nature of such monsters.

A WOMAN WHO SPOKE WITHOUT A TONGUE.

This woman was a native of Monsary, in the territory of Elvas, in Portugal. The case was attested by Wilcox, bishop of Rochester, then chaplain to the English factory at Lisbon, in a letter dated from that city, September 3, 1707, and was laid before the royal society in London. The following is an extract from the letter:—"The Conde d' Ericeya a nobleman of letters, and curious in natural knowledge, brought from the frontiers of this country a woman without a tongue, who yet speaks very well; she is seventeen years of age, but in stature exceeds not one of seven or eight. I was with her at the conde's house, and made her pronounce every letter in the alphabet, which she can do distinctly. She has not the least bit of a tongue nor any thing like it; but the teeth on both sides of her jaw, turn very much inward, and almost meet. She finds the greatest want of a tongue in eating; for as others, when they eat, move their meat about with their tongue, she is forced to use her fingers. She pretends to distinguish tastes very well, but I believe she does it imperfectly. Her voice, though very distinct, is a little hollow, and like that of old people, who have lost their teeth." London paper.

WILD ANIMALS.

The forests of Maine still abound in numerous species of wild animals, such as the moose, deer, caribou, loupcervier, lunkasoose, and many others—most of them valuable for food and for their skins. The lunkasoose (the orthography is arbitrary) is an animal of which we have only heard recently; but tradition says that a ferocious animal of huge size, with a mane like a lion, has actually been seen to come to the borders of the river, and the lumbermen say that they have heard him in the woods roaring most lustily. The Indians, too, talk about the "lunkasoose," and they are conclusive authority in such matters. A few days since two large moose were seen quietly travelling in the road near Orono! they occasionally left the track for the woods, but the great depth of the snow soon forced them back again. We believe they were pursued and caught.

The deer, which are plentiful in this region, usually herd together. A short time since some lumbermen came upon "a yard," containing nine of these poor fellows—whose fleetness is of no use to them when there are four or five feet of snow upon the ground. When discovered, they ploughed away the snow immediately about them, and prepared to defend themselves with the utmost desperation.

Bangor Courier.

HIPPOPOTAMUS.

Zeringhi, an Italian surgeon, procured one on the Nile, which measured seven feet from the extremity of the snout to the insection of the tail, sixteen feet round the body, and above seven feet in height; head four feet long, and upwards of nine feet in circumference; jaws opened about two feet, and its cutting teeth (four in each jaw) were about one foot long; feet resembled elephants'—four divisions; tail short, flat, and pointed; hide thick, covered with a few scattered hairs of a whitish colour; figure between an ox and a hog; its cry between the bellowing of the one and the grunting of the other. It frequently upsets and sinks boats when attacked. Kay's Travels.

ALGEBRA.

Algebra is the expressing of quantity by conventional symbols: *a*, *b*, *c*, *d*, are the signs or characters that denote given quantities; *z*, *y*, *x*, &c., are the signs of unknown quantities. Equal quantities are denoted by the same characters; *m*, *n*, *r*, *s*, *t*, are the characters of indeterminate exponents.

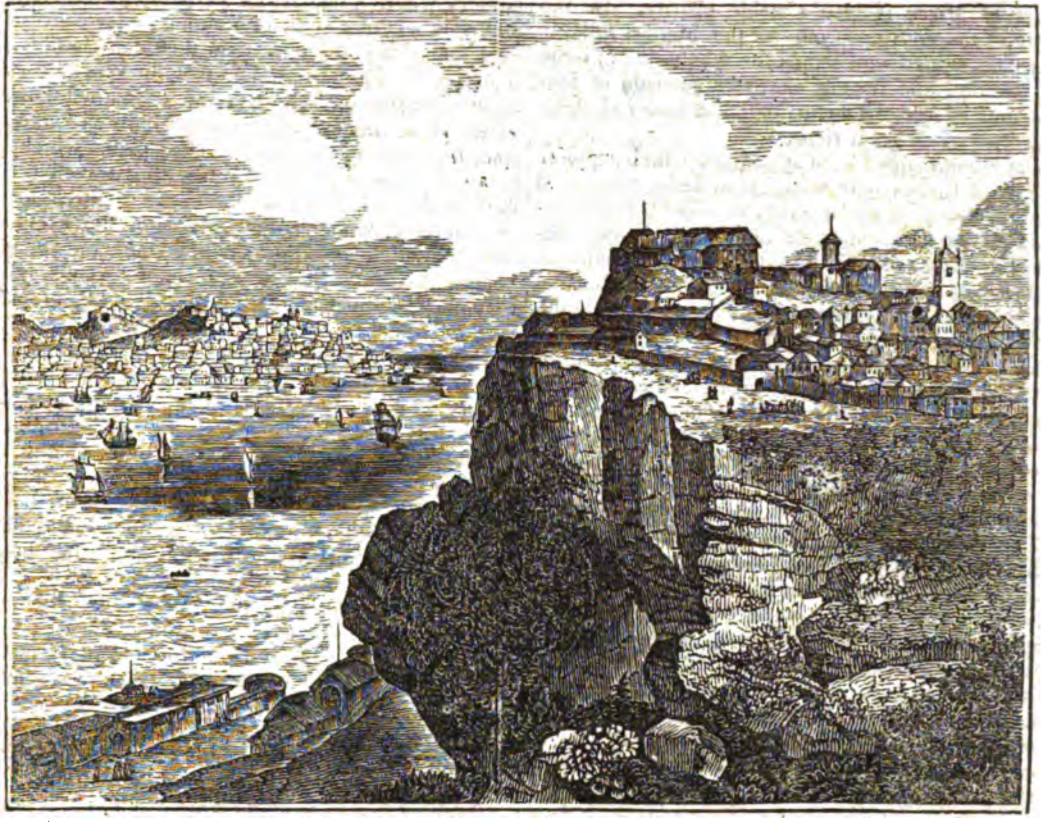
+	the sign of	Addition.
—	"	Substraction.
=	"	Equality.
:	"	Arithmetical Proportion disjunct.
: :	"	Identity of ratio.
×	"	Multiplication.
÷	"	Division.
●	"	Involution.
∼	"	Similitude.
✓	"	Radicality.

In all the applications of Algebra it is not the magnitudes concerned that we consider, but merely their proportions. The letters of the alphabet, or any other symbol used in Algebra, are not therefore, strictly speaking, the representations of magnitudes; they denote ratios, or abstract numbers.

Genius, when employed in works whose tendency it is to demoralize and to degrade us, should be contemplated with abhorrence rather than with admiration; such a monument of its power, may indeed be stamped with immortality, but like the Colisæum at Rome, we *deplore* its magnificence, because we detest the purposes for which it was designed.

Anguish of mind has driven thousands to suicide; anguish of body, none. This proves, that the health of the mind is of far greater consequence than the health of the body, although both are deserving of much more attention than either of them receive.

Lacon.



LISBON, VIEWED FROM FORT ALMADA.

The preceding engraving is a graphick sketch of Lisbon. This city is beautifully situated on the north side of the Tagus, about ten miles from the sea. Like old Rome, it stands on seven hills. Lisbon has one of the finest harbours in the world, which is capable of containing upwards of 10,000 sail of shipping without being crowded.

Before the dreadful earthquake in 1755, most of the private houses made a very miserable appearance; but now it has many magnificent buildings, particularly the square called *Rosso*. Previous to that calamity it contained about 30,000 houses, 150,000 inhabitants, 40 parish churches, besides its monasteries, 26 gates on the side of the Tagus, and 17 on the land side. It had 20 monasteries for monks, and 18 nunneries. According to Mr. Barretti, he "supposes that two thirds of the city were levelled with the ground, and such as withstood the shock received considerable injury. Besides these, a great number of large churches were thrown down and destroyed, two royal palaces, and many convents, nunneries, hospitals, and other public edifices. The king and royal family were in their carriages, passing to a palace in the country, and, happening to be in an open space, were rescued from the miserable fate which they beheld all around them. Many who had lived in opulence, ease, and splendour, were reduced to the most distressing want, even of the common necessaries of life; whilst lingering and tormenting deaths awaited thousands who were overwhelmed by the falling buildings, or consumed by the spreading flames, which burst from the numerous fires, and formed an almost general conflagration. Those of the wretched inhabitants who escaped destruction in these horrid shapes were forced to reside in the open air, scarcely able to procure a sufficient subsistence for their almost exhausted bodies." Mr. Barretti says, "that 90,000 persons are supposed to have been lost on that fatal day. Imagination can scarcely form to itself a scene of confusion, horrour, and death more dreadful than this. After the shocks of the earth had subsided, the fire continued raging for many weeks, by which the pestilential air, produced from the numerous dead bodies, was purified, and the surviving remnant of the inhabitants thereby preserved their health, although surrounded by putrefaction."

For the security of Lisbon there is a fort at the mouth of the river on each side, and a bar that runs across it, and which is very dangerous to pass without pilots. Higher up, at a place where the river is considerably contracted, there is a fort called *Torre de Belem*, or the Tower of Belem, under whose guns all ships must pass in their way to the city; and on the other side are several other forts. (*See engraving.*) The king's principal palace is seated on the river, and is large and commodious. Of the hospitals, that called the *Great* is worthy of particular notice. This hospital is obliged to receive all persons, of whatever degree, nation, or religion, without any exception. At the village of Belem, near Lisbon, is a noble hospital for decayed gentlemen who have served the king, and have not a sufficiency to maintain themselves. That called the

House of Mercy is also a noble charity. In the centre of the city, upon one of the highest hills, is the castle, which commands the whole, being large and ancient, and having always a garrison of four regiments of foot. The cathedral, a heavy Gothick edifice, contains great riches.

The famous aqueduct of Alcantara, which supplies the city of Lisbon with water, is a noble work, and deserves the attention of every traveller: it is composed of two different kinds of arches, the one Roman, the other Gothick, by which the uniformity of the building is destroyed. Although the earthquake was so dreadful to Lisbon and its vicinity, this building withstood the shock, with the exception of some of the key-stones being thrown out, when the centres closed again. At the village of Belem are a handsome royal palace, and a magnificent monastery, dedicated to St. Jerome; and the whole circumjacent country is extremely pleasant, abounding in olives and other fruit-trees. Lisbon contains about 200,000 inhabitants.

The Portuguese sensibly exhibit the effects of a warm climate, in their dark hue, and in those traits of national character which are usually found in warm climates. These are ardent passions, a strong propensity to revenge, superstition, indolence, joined with abstemiousness, and the habit of submitting, contentedly, to a very scanty share of the comforts of life. But it must not be forgotten, that there was a period when this small kingdom was the seat of more enterprise than existed in any other country in the world. This was in the 15th century, in the time of Prince Henry, and of Emmanuel I. As a people and a nation, the Portuguese and Spanish have one common origin, from which arises a great similarity in their language, customs, laws, and government. But with all this similarity of character, there has been a perpetual enmity between them, which time seems to have converted into habit, and policy formed into a system.

The following observations of Dr. Southey are worthy of notice:—

"The Spaniards despise the Portuguese; the Portuguese hate the Spaniards." "The Spaniards in their national songs threaten the Portuguese with invasion; the Portuguese content themselves with defying the Spaniards." "Strip a Spaniard of all his virtues, and you make a Portuguese of him," says the Spanish proverb. "I have heard it more truly said," says Dr. Southey, "Add hypocrisy to a Spaniard's vices, and you have a Portuguese character." "Almost every man in Spain smokes; the Portuguese never smoke, but most of them take snuff. None of the Spaniards will use a wheelbarrow; none of the Portuguese will carry a burden: the one says it is only fit for beasts to draw carriages; the other, that it is fit only for beasts to carry burdens."

We will suppose our first entrance into Portugal shall be from the sea: and that, having entered the Tagus, we land at *Cintra*, at the foot of that mass of conical mountains forming *Cape Roxent*, where the shady and lofty trees of the north of Europe unite with the fragrant orange trees of the south.

This spot is, indeed, not only a pleasing relief from the sameness of water and sky, but is even charming in Portugal, for these romantick shades and refreshing brooks are infinitely more delightful in a country where a potent sun burns up all vegetation, and even where a sight of running water conveys a cool and refreshing idea, than they can possibly be in our colder climate; and, in fact, the spectator may almost imagine himself in some enchanted bower, when, from this romantick and highly picturesque spot, he contemplates the scorched plains which lay below it. In short, as an interesting traveller has described it, "CINTRA is the abode of love; for in the midst of summer the coolness of the evenings are delightful, and the scattered situation of the houses, the rocks, the gardens, and the woods, afford innumerable opportunities for the delights of pleasure in solitude."

Passing this delightful spot, the approach of Lisbon is grand in the extreme:—a vast expanse of water—a river, in many places, of more than six miles in breadth—the numbers of vessels of all descriptions—the extensive city stretching along the northern bank, and proudly rearing on an amphitheatre of hills—the cultivated heights covered with villas, monasteries, churches, gardens, and olive woods—all combine to present a most extraordinary assemblage of beauties to the traveller.

At the first entrance into the Tagus, when the limits of the city can scarcely be distinguished in the distance, the majestick, conical, and rocky mountains of *Cintra* form a most delightful and charming foreground to the landscape; but as the voyager advances, he more distinctly perceives the town itself on its seven hills rising with a degree of majesty which fills his mind with wonder and delight.

Such is *Lisbon* on its first approach; nor is it surprising that the Portuguese should consider it as the finest view in the *world*, and adopt that proverb which says, "*He who has not seen Lisbon, has seen nothing.*"

The interiour of this city, however, forms a striking contrast to the outside; in many places, from its situation, it is so steep, that it is literally a great labour, in that climate, to walk along the streets; and even the lower street, which runs along by the side of the river, rises and falls at intervals very considerably.

During the heavy rains, the waters rush down these declivities in such torrents that they are often impassable: instances have often occurred of men, and even horses, having been carried away by the rapidity of the fall, and almost swept into the river. Yet, as all inconveniences have their attendant good, this possesses the advantage of washing away the filth, and of cleansing the town, which otherwise, the indolent Portuguese would have left for the interference of some of their saints.

The streets are also very irregularly built; they are badly paved, generally narrow, and present a mixture of elegant mansions, and of small, wretched, and even squalid houses. In many parts, indeed, these habitations are but thinly planted; and the stranger is often surprised at meeting not only with gardens, but even with corn-fields amongst the various buildings, which, added to the dirtiness and the gloomy solitude of the outskirts, produce an effect resembling the cities in Moorish and in other eastern countries. During the day, all the filth of the city is suffered to lie in heaps, even in the most frequented streets, and when not washed away by the rain, these collections of indolence and filthiness require some skill in walking not to sink in them; nay, even in some of the greatest thoroughfares, there is nothing on which the foot passenger can pass but a narrow path winding near the houses; and as all the carts keep as near to the houses as possible, in order to take the horses out of the deepest part of the mud, it often happens that the unfortunate passenger receives all the dirt and filth which is thus most lavishly splashed about. But the night is even worse; for though formerly the city was lighted, yet lately this practice has been laid aside; and as it is the custom to close the window-shutters at an early hour, there is no light whatever to diversify these scenes of dirt and desolation; to which we must add the annoyance of whole troops of half-starved dogs, that are suffered to wander about like so many hungry wolves, and are often almost as dangerous as the ragged banditti who are suffered by the police to commit their depredations unmolested. The unfortunate stranger, too, is constantly pestered with whole hosts of beggars, a trade which seems not confined to any particular class of society, but is practised under various pretences by all:—one species of it is for the relief of souls in purgatory, for which purpose the religious fraternities are permitted to collect alms, the greater part of which they are said to apply to their own account.

Wretched as is the interiour of this proud city, yet its environs have a striking peculiarity of appearance; for the whole vicinity, to a considerable distance from Lisbon, is covered with large gardens, surrounded with lofty walls, between which it is most tiresome to travel even for leagues, in some directions, without being able to see any other object, and being in continual danger of mistaking the road.

This taste, which is universal, has been justly distinguished as selfish and morose—oriental and Moorish—and may probably have had its origin in their constitutional jealousy, which prompts them to choose a close fortification in preference to an open garden.

These extensive enclosures are called *quinta*, and they are often very large, and laid out rather for profit than for pleasure, containing within their walls plantations of orange and olive trees, and sometimes even corn-fields; they have, in general, a large garden-house situated at one end, where their owners and families are accustomed to spend part of their summer in almost monastick seclusion.

When the traveller penetrates into the interiour of the country, he soon observes that the great part of the eastern districts consists of extensive heaths, which have an undulating appearance, from the number of small hills with which they are intersected. The soil in most places is sandy, and swampy tracts are seldom found, as, in general, the extreme aridity of the soil is the cause of the great barrenness of these wide-extended plains and hills.

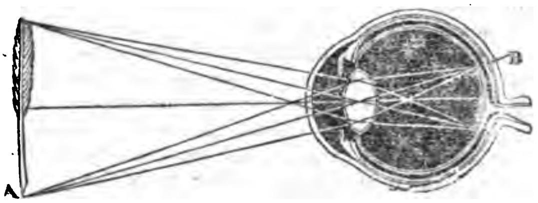
Notwithstanding this want of fertility and cultivation, it is extremely pleasant to traverse this part of the country in the spring, when the beautiful varieties of the heath plants, and the charming *cisti** of these southern regions are all in their highest bloom, and the mild exhilarating atmosphere is filled with innumerable perfumes. This variety of shrubs is indeed uncommonly great, and presents a thousand delights to the botanist, for their beauty far exceeds that of our northern plants; besides which, they are evergreens, and are exquisitely beautiful even in winter. Of these heaths, one species grows to the height of six feet, and, when in bloom, is entirely covered with red flowers, presenting a most lively appearance; yet, notwithstanding all this profusion of beauty, these solitary tracts soon become irksome to the traveller; for where the romantick and sublime are wanting, no beauty of country can long be pleasing, unless intermingled with cultivation.

THE FIVE SENSES.

THE SENSE OF SIGHT.—No. 3. LAWS OF VISION.

6. DIRECTION OF VISIBLE OBJECTS.

The mind, in perceiving any point *A* of an object, (that of the pen's point, for example,) receives the rays by which it is made visible at different degrees of obliquity; but notwithstanding the difference of these degrees, the object is seen only in the direction of the central ray *A B*; and this is always perpendicular to the retina. Now the surface of the retina being of a spherical form, it follows, that these rays being perpendicular to it, must invariably pass through a point which is the centre of the curve of the retina, and which is therefore called the *centre of visible direction.* This centre is a fixed point in the vitreous humour, and as it never changes its place, however great may be the rotation of the eye, it is evident that it must be the same with the centre round which the eye rolls when it is in motion. It results from this coincidence of the two centres, that the unvarying stability of the objects at which we look is preserved.



7. CAUSE OF ERECT VISION.

The humours of the eye acting like a convex lens, a picture of the object is painted on the retina in an *inverted* position. To young and uninformed persons this inversion of the image makes the cause of erect vision a subject of much difficulty and by some of the old philosophers it was considered as one of the mysteries of nature. But the law of visible direction makes the whole a matter of easy comprehension. It will be observed, that the rays of visible direction cross each other at the point or centre of visible direction; those from the lower part of the picture go to the upper part of the object, and those from the upper part of the picture go to the lower part of the object, and thus when the mind would perceive the top of an object, it refers from the bottom of the picture *upwards*, and when it would perceive the bottom of an object, it refers from the top of the picture *downwards*, whereby a true notion of the erectness of objects is obtained (as, indeed, it only can be) by means of an inverted picture.

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*Cisti, (in the plural,) small sunflowers. (Cistus, singular.)

8 ACCOMMODATION OF THE EYE TO DIFFERENT DISTANCES.

The rays by which vision is performed in reading a book, or paper, make, in falling upon the eye, a much greater angle than those would do which fall upon the eye in looking at a distant landscape; and this difference in the obliquity of the rays is followed by a difference of the degrees in which the two sets of rays are converged to a focus. The rays from the "Family Magazine," for instance, as they would form a greater angle, would also be converged to a focus sooner than those from the distant landscape; and consequently, if the retina was so situated as to receive the focus of rays from the book, the focus of rays from the distant landscape would be formed beyond it, and would therefore confound the eye with an indistinct image; but if, on the contrary, the retina was so adapted as to receive the focus of rays from the distant landscape, that from the book would not reach it, and would therefore be invisible. To meet these difficulties, the eye possesses a power of adjusting its different parts in such a manner to the distance of the different objects at which it looks, as always to cause the visual rays to converge to a point on the retina. These adjustments consist chiefly in an alteration of the convexity of the cornea, and a movement of the crystalline lens nearer to, or farther from, the pupil, by which the axis of the eye is made longer or shorter, and the degree of convergence greater or less as the occasion may require. These beautiful operations by use become involuntary, although they still continue under the dominion of the will, and can be performed or not at pleasure, as the reader may at this moment try for himself, by letting his eye, as he looks at the printing, relax into a state of repose, when the letters will immediately become indistinguishable, and appear as they do to an aged person. This state of repose is one natural to the eye, and in which it is adjusted to long sight, a faculty which most old persons possess; for we have observed that they can commonly distinguish all that to the strongest eye is visible, of a ship in the horizon, while at the same time they are totally unable to read the letters of a book.

9. CAUSE OF SINGLE VISION WITH TWO EYES.

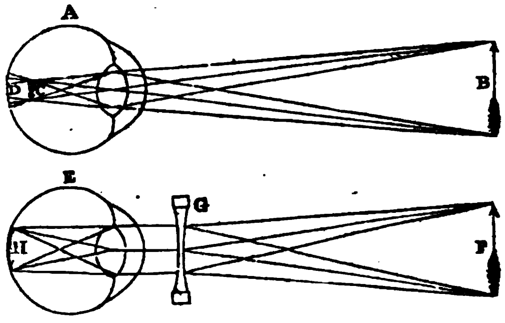
Much time has been wasted and great ignorance exhibited, in the discussion of this subject; but as we now live in an age when an appeal to facts alone is allowed in the settlement of a proposition, it becomes one of very easy solution. By the aid of the straight muscles of the eye, we can direct the axis of each eye, so that when prolonged they may meet in any desired points beyond the distance of about six inches. Let this desired point be a lighted lamp at the end of a dark gallery, and let us direct our eyes to the lamp—a picture of it would then be formed on the retina of each eye; but because the lines of visible-direction from any two corresponding points of the pictures meet on the one real point of the object, the two pictured points must of necessity be seen as one point; and the collection of points forming the picture of the lamp in one eye, will exactly coincide with the collection of points forming the picture in the other eye.

10. CAUSE OF LONGSIGHTEDNESS.

Old persons are usually longsighted: that is, their eyes lose the power of adjusting themselves to short distances. This afflicting disability usually arises from a flattening of the cornea, and from a relaxation in the structure of the crystalline lens, by which its power of acute refraction is lessened.

11. CAUSE OF SHORTSIGHTEDNESS.

Shortsightedness arises from causes exactly the reverse of those which occasion longsightedness, namely, too great a convexity of the cornea, and an excessive density in the structure of the crystalline lens, by both of which the visual rays from near objects are converged to a focus before they reach the retina. Both these distressing maladies have however been kindly obviated by the direction of Providence in the invention of spectacles, which were first generally used in Holland in the fourteenth century. By these simple and invaluable instruments, longsightedness is corrected by the use of a convex lens, which converges the spreading rays to a focus on the retina; and shortsightedness, in like manner, by a concave lens, which diverges the rays, and prevents them from coalescing in a focus, before they reach the retina.



A. a shortsighted eye; B, an arrow which it attempts to perceive, but is prevented by the convergence of the visual rays to foci, at C, before they reach the retina at D.

E. the same eye similarly situated showing how, by the intervention of a concave lens G, the rays are diverged, and the image of the arrow, F, accurately converged to the retina at H.

MOTIONS OF THE EYE.

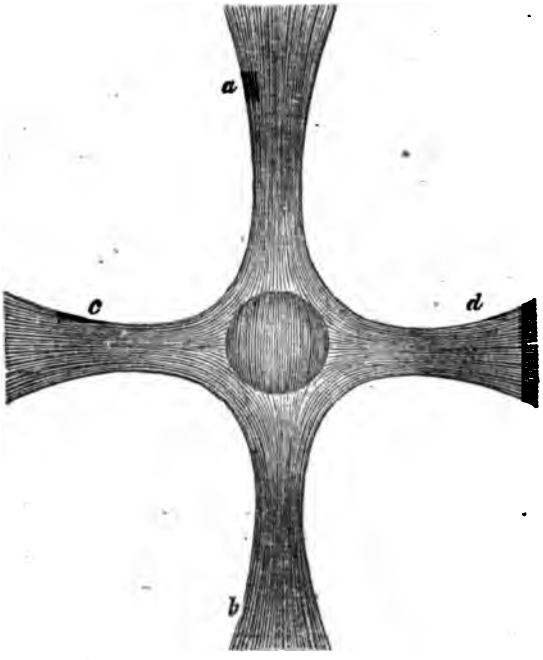
In looking at a telescope, our attention is arrested by the ease with which it is turned, at the will of the operator, from one object to another, and we readily perceive that without the aid of a number of adjusting wheels and screws, by which its motions are effected, the instrument itself would have been comparatively useless. It is just the same with the eye. We have seen that it is admirably contrived in all its parts for the production of vision, and we shall presently find that it is no less admirably furnished with the necessary apparatus for making its powers constantly available to our wants and wishes. Dr. More, in his "Antidote against Atheism," has quaintly, but prettily said, that "the eye in its structure is so perfect, that the reason of an atheist ought easily to have rested in the exhibition of its marvels, and without further inquiry, have passed from admiration of the contrivance, to worship of the *Divine Contriver.*" But willing to accumulate the argument, he goes on to observe that "man being able to move his whole body upward and downward, and on every side, might have unawares thought himself sufficiently well provided for; but Nature hath added *muscles* also to the eyes, that no perfection might be wanting; for we have often occasion to move our eyes when convenience requires that our head should remain unmoved, as in reading, and in viewing more particularly an object set before us, by transferring the axis of our eyes all over it; and that this may be done with the more ease and certainty, she hath furnished this organ with no fewer than *six* muscles, to move it upward, downward, to the right and left, obliquely and round about."

These remarks will prepare the reader to consider in detail the "admirable particulars" of the muscular apparatus for moving the eye.

The eye, in its natural position, is placed in a bony chamber, called the "*orbit*," or, more commonly, the "socket," where it rests in a bed of fat, so soft and yielding, as to allow it a free rolling motion in any direction. The motions are produced by four straight and two oblique muscles.

STRAIGHT MUSCLES.

1. THE RECTUS ATTOLENS OCULI—Latin terms signifying *the straight raising muscle of the eye.* This muscle starts, or, in anatomical language, "arises" from a portion of the spheroidal bone in the bottom of the chamber of the eye, and passing forwards and *upwards*, is fastened, or "inserted" into the sclerotick coat, at the *top* of the eyeball. Its use is, by contracting in its length, to turn the front of the eye upwards, as in the act of devotion, or the expression of scorn, from which latter circumstance it was called by the old anatomists, "*superbus*," denoting a high look, and haughty disposition.



The Cornea, with the four straight Muscles of the Eye spread out, showing the junction of their Tendons with the Sclerotick Coat.

a, The Attolens; *b*, The Deprimens; *c*, The Adductor; *d*, Abductor.

2. RECTUS ATTOLENS OCULI—Latin terms signifying *straight depressing muscle of the eye.* Arises from the spheroidal bone in the bottom of the chamber of the eye, and passing forwards and *downwards*, is inserted into the sclerotick coat, at the *bottom* of the eyeball. It will be observed that the direction and insertion of this muscle are exactly the opposite of the attolens, and, as might therefore be inferred, its use is exactly the reverse. It turns the front of the eye downwards, and has been called the "*humilis*," as betokening humility, the expression which its action produces.

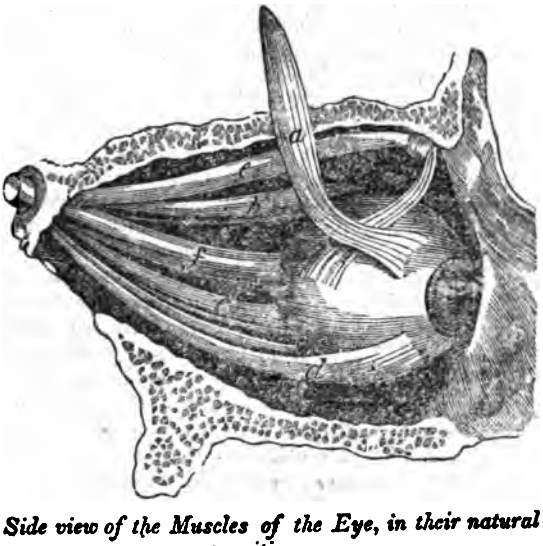
3. RECTUS ADDUCENS OCULI, or the ADDUCTOR. Latin names signifying *the straight muscle which "brings to," or turns inwards the ball of the eye.* Arises like the preceding, from the bottom of the chamber of the eye, and passing forwards towards the *inner* angle of the eyelids, is inserted into the sclerotick coat on the side next the nose. Its use is to roll the front of the eye inwards, and was once called from this circumstance, "*bibitorious*," a Latin word signifying a drinker, because in the act of drinking we turn the eye inwards to examine the fluid.

4. RECTUS ABDUCENS OCULI, or the ABDUCTOR—Latin names signifying *the straight muscle which "leads away," or turns outwards the ball of the eye.* Arises from the bottom of the orbit, and passing forwards towards the *outer* angle of the eyelids, is inserted into the sclerotick coat, on the side of the eyeball next the temple. In action, it rolls the front of the eye outwards, or from the nose, and was called by our fanciful forefathers, "*indignabundus*," a Latin term, meaning "enraged," and denoting it as the muscle by which are produced those sidelong looks which express anger and scornful resentment.

These four muscles, at their origin, surround and protect the optick nerve, where it enters the chamber of the eye; and at their termination expand into four broad tendons, which belt the eyeball, and add greatly to its strength.

OBLIQUE MUSCLES.

1. OBLIQUUS SUPERIOR OCULI—Latin names, signifying the principal, sloping, or "sideway," muscle of the eye. It has also been called "*longissimus oculi*," because of the greatness of its length, compared to the second oblique muscle, which from its comparative shortness, was named *brevissimus oculi.*



Side view of the Muscles of the Eye, in their natural positions.

a. b. c. d. the Four Straight Muscles; (*a* is turned up to prevent the others from being hidden) *e.* the great Oblique Muscle; *f*, the Optick Nerve. (The second Oblique Muscle is not shown, but its situation may be inferred.

This muscle is, in many respects, one of the most interesting in the body; and, as it offers a brilliant example of the mechanical wisdom of the CREATOR, demands our closest attention. It arises from the margin of the whole in the bottom of the orbit which transmits the optick nerve between the first and their straight muscles. From thence it runs round the ball of the eye, slantwise, to the great *canthus*, or inner angle of the eyelids, in the upper side of which there is a cartilaginous ring, called the *trochlea*, through which it passes like a rope over a pulley, and, turning backwards, it proceeds between the first straight muscle and the ball of the eye, and increasing in breadth, it is inserted into the sclerotick coat on the back part of the ball of the eye, near the abductor. When it acts, it rolls the eye about its axis, towards the nose, and at the same time draws it forwards, and turns the pupil downwards.

The learned Dr. Paley, in speaking of a muscle of the same structure, which, in animals, assists in drawing a cleaning membrane over the eye to remove dust or other impurities, makes some valuable remarks, which, as they illustrate our subject, we shall quote. He says, after describing its "marvellous mechanism:"—"a muscle passed through a loop, and inflected, as if it were round a pulley. This is a peculiarity, and observe the advantage of it. A single muscle, with a straight tendon, which is the common form, would have been sufficient if it had had power to draw far enough. But the contraction necessary to draw the membrane over the whole eye, *required a longer muscle than could lie straight at the bottom of the eye. Therefore, in order to have a greater length in a less compass, the cord of the muscle makes an angle*, which perfectly answers the required end." Now this is also strikingly true of the great oblique muscle of the human eye—the end, and the means used for its accomplishments, being, in both cases, precisely the same; for Cowper, in his *Myotomia Reformata*, has remarked—"When any of the straight muscles contract, they would draw the ball of the eye inwards by some equal force," which is exactly what the great oblique muscle, assisted by its lesser companion, which we shall presently describe, is admirably qualified to perform. The superiour strength of the straight muscles acting, be it observed, rectilineally, and with a short distance, is thus beautifully counterpoised by a simple mechanical arrangement, in which the power of a weak muscle is doubled, and the disadvantages arising from the obliquity of its course and the awkwardness of its situation, are actually made to assist the very operations which they might have been expected to impede.

2. OBLIQUUS INFERIOR OCULI, or the *small sloping muscle of the eye*. It arises from the lower edge of the orbit, on the side next the nose, and passing obliquely and somewhat transversely backwards, it slips under the *deprimens*, and, spreading into a flat tendon, is inserted into the back and outer part of the sclerotica, directly between the *abducens* and the optick nerve. Its office is to roll the eye about its axis from the nose, and, at the same time, to draw it forwards, and direct the pupil upwards.

EQUILIBRIUM OF THE MUSCLES OF THE EYE.

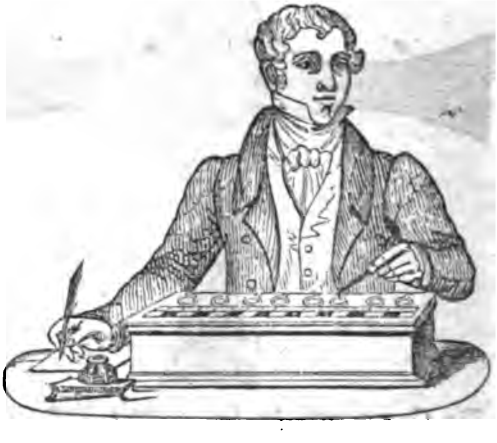
This subject has been so concisely and pithily discussed by Durham, in his *Physico-Theology*, that we shall content ourselves by simply extracting a a portion of his remarks:—

"Nothing," he says, "can be more manifestly an act of contrivance and design than the muscles of the eye, admirably adapted to move it any and every way; upwards, downwards, to this side or that, or howsoever we please, or there is occasion for, *so as always to keep the parallelism of the eye which is necessary to true vision.* For the performance of which service, the form, the position, and the due strength of each muscle is admirable. But what is most to be here noted is the exquisite equilibration of all the muscles, effected partly by the equality of the strength, which is the case of the *adductor* and the *abductor*, partly by their peculiar origin, or the addition of the *trochlea*, which is the case of *attolens* and *deprimens*. By this so curious and exact equilibration, not only unseemly contortions, and incommodious vagations of the eye, are prevented, but also it is able with great readiness and exactness, to apply itself to every object.

"Seeing, then," says Ray, in his *Wisdom of God in the Creation*, "the eye is composed of so great a variety of parts, all conspiring to the use of vision, whereof some are absolutely necessary, others very useful and convenient, none idle or superfluous; who can but believe that *this organ was designed and made purposely for the use for which it serves?*"

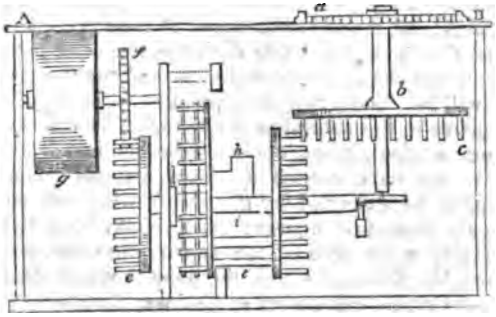
ABACUS.

To give our readers an idea of the general construction of these machines, and of the principles on which it proceeded, we will select for explanation that of Pascal, the earliest. Of those which have since been contrived, there are some which have been considered to possess advantages over that in practice; but as the first of its kind, and as one which may have served as a model to many of its successors, it is the object of our preference on the present occasion.



The accompanying illustration exhibits a general view of the instrument with the operator at work at it, who has one hand employed in putting into motion one of the moveable wheels of the apparatus, and the other engaged in connecting the operations of the machine with the figures contained on the paper by his side. It consists of a box covered with a plate of metal, pierced on one side with several square holes, as represented in the figure. On the opposite side of the plate are a number of toothed wheels, each moveable, and turning freely about its own centre. The first to the extreme right has 12 teeth; the second, proceeding from right to left has twenty, and all the others have 10. About each of these wheels an outer rim or circle is described on the surface of the plate, which circle is divided into the same number of equal parts as there are teeth in the wheel which it surrounds, and which is moveable, as it were within it. The figures corresponding to each of these points of division are inscribed on all the fixed circles, commencing with 0 at that portion of each which is nearest to the extremity of the side of the box on which they are placed, and proceeding round in the direction of from left to right. Passing over at each of these *zero* points of division, and attached to the surface of the plate, is a small tongue of metal which projects slightly over the enclosed wheel, so as not, however, to rest on or be in contact with it, but simply for the purpose of arresting the progress of the rod held in the hand of the operator, as seen in the preceding illustration, when engaged in imparting motion to any one of the wheels. From the number of teeth which we have given to those wheels, it is evident that the one to the extreme right, which contains 12, is intended for what may be termed a pence wheel; the second, which has 20, for a shillings wheel; the third, which has 10, for the units of pounds; the fourth, for tens; the fifth, for hundreds; the sixth, for thousands; the seventh, for tens of thousands; and the eighth, for hundreds of thousands. By enlarging the machine, this number might be increased, and the power of the instrument extended.

We may now proceed to point out the internal arrangement of the machinery. Motion is communicated by the wheel and axis *a b*, which is furnished with a contrite wheel *c*. This actuates the next in the series which is placed in the opposite direction. On the same axis are placed two similar wheels *d e*, the last of which gives motion to the wheel and barrel *f g*. There are two apertures in the upper plate A B, through which the figures on the barrel may be seen, so that the person who moves the wheel *a* may readily register the amount of motion, by observing the figures as they pass these apertures.



In the complete machine there are several of these trains of wheels, and they communicate with each other by a small lever *h*, shown in the diagram. Now, if we suppose the first of these barrels to have made an entire revolution, the two connecting bars *i i*, will have raised the lever and moved the communicating wheel of the next train one tooth forward in its course. If, for example, it be the barrel which represents shillings, it will by this means indicate a single pound on the divided circle of the next train. Notwithstanding the skill and contrivance bestowed upon instruments of a nature similar to that we have just described, their power is necessarily but very limited, and they bear no comparison either in ingenuity or magnitude to the grand design conceived, and nearly executed, by Mr. Babbage. Their very highest functions were but to perform the operations of common arithmetick; Mr. Babbage's engine, it is true, can perform these operations, it can also extract the roots of numbers, and approximate to the roots of equations, and even to their impossible roots; but this is not its object. Its function in contradistinction to that of all other contrivances for calculating, is to imbody in machinery the method of differences, which has never before been done; and the effects which it is capable of producing, and the works which, in the course of a few years, we expect to see it execute, will place it at an infinite distance from all other efforts of mechanical genius. Great as the power of mechanism is known to be, yet we venture to say, that many of the most intelligent of our readers will scarcely admit it to be possible, that astronomical and navigation tables can be accurately computed by machinery; that the machine can itself correct the errours which it may commit; and that the results, when absolutely free from errour, can be printed off without the aid of human hands, or the operation of human intelligence. "All this, however," says Sir David Brewster, in his entertaining *Letters on Natural Magic*, "Mr. Babbage's machine can do; and, as I have had the advantage of seeing it actually calculate, and of studying its construction with Mr. Babbage himself, I am able to make this statement on personal observation." It consists essentially of two parts, a calculating, and a printing part, both of which are necessary to the fulfilment of the inventor's views, for the whole advantage would be lost if the computations made by the machine were copied by human hands and transferred to types by the common process. The greater part of the calculating machinery, of which the drawings alone cover upwards of 400 square feet of surface, is already constructed, and exhibits workmanship of such extraordinary skill and beauty, that nothing approaching to it has hitherto been witnessed. In the printing part, less progress has been made in the actual execution, in consequence of the difficulty of its contrivance, not for transferring the computations from the calculating part to the copper, or other plate destined to receive them, but for giving to the plate itself that number and variety of movements which the forms adopted in printed tables may call for in practice.

The practical object of the calculating engine is to compute and print a great variety and extent of astronomical and navigation tables, which could not otherwise be done without enormous intellectual and manual labour, and which, even if executed by such labour, could not be calculated with the requisite accuracy. Mathematicians, astronomers, and navigators do not require to be informed of the real value of such tables; but it may be proper to state, for the information of others, that *seventeen* large folio volumes of logarithmick tables alone were calculated under the superintendance of M. Prony, at an enormous expense to the French government; and that the British government regarded these tables to be of such national value, that they proposed to the French Board of Longitude, to print an *abridgement* of them at the joint expense of the two nations, and offered to advance £5000 for that purpose. But, besides logarithmick tables, Mr. Babbage's machine will calculate tables of the powers and products of numbers, and all astronomical tables for determining the positions of the sun, moon, and planets; and the same mechanical principles have enabled him to integrate innumerable equations of finite differences, that is, when the equation of differences is given, he can, by setting an engine, produce at the end of a given time, any distant term which may be required, or any succession of terms commencing at a distant point.

On the means of accomplishing this, we need make no apology for quoting Mr. Babbage's own words. "As the possibility of performing arithmetical calculations by machinery may appear to non-mathematical readers too large a postulate, and as it is connected with the subject of the division of labour, I shall here endeavour, in a few lines, to give some slight perception of the manner in which this can be done; and thus to remove a small portion of the veil which covers that apparent mystery. That nearly all tables of numbers which follow any law, however complicated, may be formed, to a greater or less extent, solely by the proper arrangement of the successive addition and substraction of numbers befitting each table, is a general principle which can be demonstrated to those only who are well acquainted with mathematicks; but the mind, even of the reader who is but very slightly acquainted with that science, will readily conceive that it is not impossible, by attending to the following example. Let us consider the subjoined table. This table is the beginning of one in very extensive use, which has been printed and reprinted very frequently in many countries and is called a table of square numbers.

Terms of the Table.	A. Table of Squares.	B. First Difference.	C. Second Difference.
1	1	3	
2	4	5	2
3	9	7	2
4	16	9	2
5	25	11	2
6	36	13	2
7	49		

Any number in the table, column A, may be obtained by multiplying the number which expresses the distance of that term from the commencement of the table by itself; thus 25 is the fifth term from the beginning of the table, and 5 multiplied by itself, or 5 is equal to 25. Let us now substract each term of this table from the next succeeding term. and place the results in another column (B), which may be called first-difference column. If we again substract each term of this first-difference from the succeeding term, we find the result is always the number 2 (column C); and that the same number will always recur in that column, which may be called the second difference, will appear to any person who takes the trouble to carry on the table a few terms further. Now, when once this is admitted as a known fact, it is quite clear that, provided the first term (1) of the table, the first term (3) of the first-differences, and the first term (2) of the second or constant difference, are originally given, we can continue the table to any extent, merely by simple addition: for the series of first-differences may be formed by repeatedly adding the constant difference 2 to (3) the first number in column B, and we then necessarily have the series of odd numbers, 3, 5, 7, &c.; and again, by successively adding each of these to the first number (1) of the table, we produce the square numbers."

Having thus thrown some light on the theoretical part of the question, Mr. Babbage proceeds to show that the mechanical execution of such an engine as would produce this series of numbers, is not so far removed from that of ordinary machinery as might be conceived. He imagines three clocks to be placed on the table, side by side, each having only one hand, and a thousand divisions instead of twelve hours marked on the face; and every time a string is pulled, each strikes on a bell the numbers of the divisions to which the hand points. Let it be supposed that two of the clocks, for the sake of distinction called B and C, have some mechanism by which the clock C advances the hand of the clock B one division for each stroke it makes on its own bell; and let the clock B by a similar contrivance advance the hand of the clock A one division for each stroke it makes on its own bell. Having set the hand of the clock A to the division I, that of B to III, and that of C to II, pull the string of clock A, which will strike one; pull that of clock B, which will strike three, and at the same time, in consequence of the mechanism we have referred to above, will advance the hand of A three divisions. Pull the string of C, which will strike two and advance the hand of B two divisions, or to division V. Let this operation be repeated; A will then strike four; B will strike five, and in so doing will advance the hand of A five divisions; and C will again strike two, at the same time advancing the hand of B two divisions. Again pull A, and it will strike nine; B will strike seven, and C two. If now those divisions struck, or pointed at by the clock A be attended to and written down, it will be found that they produce a series of the squares of the natural numbers; and this will be the more evident, if the operation be continued further than we have carried it. Such a series could of course be extended by this mechanism only so far as the three first figures; but this may be sufficient to give some idea of the construction, and was in fact, Mr. Babbage states, the point to which the first model of his calculating engine was directed.

In order to convey some idea of the power of this stupendous machine, we may mention the effects produced by a small trial engine constructed by the inventor, and by which he computed the following table from the formula $x^2 + x + 41$. The figures as they were calculated by the machine, were not exhibited to the eye as in sliding rules and similar instruments, but were actually presented to it on two opposite sides of the machine, the number 383, for example, appearing in figures before the person employed in copying. The following table was calculated by the engine referred to:—

41	131	383	797	1373
43	151	421	853	1447
47	173	461	911	1523
53	197	583	971	1601
61	223	547	1033	1681
71	251	593	1097	1763
83	281	641	1163	1847
97	313	691	1231	1933
113	347	743	1301	2021

While the machine was occupied in calculating this table, a friend of the inventor undertook to write down the numbers as they appeared. In consequence of the copyist writing quickly, he rather more than kept pace with the engine at first, but as soon as five figures appeared, the machine was at least equal in speed to the writer. At another trial, thirty-two numbers of the same table were calculated in the space of two minutes and thirty seconds, and as these contained eighty-two figures, the engine produced thirty-three figures every minute, or more than one figure in every two seconds. On a subsequent occasion, it produced forty-four figures per minute; and this rate of computation could be maintained for any length of time.

It may be proper to add, that Mr. Babbage has lately stated, that he considered the powers of his machine as scarcely at all developed—indeed, that the automaton was yet but in its infancy. If such be the childhood of this gigantick engine, what may we not expect from its maturity? There is a general belief that this gentleman has received a large parliamentary grant as a reward for his invention; this is, however, a vulgar errour. He has superintended the construction of the instrument at the expense of the government, but he has not directly or indirectly received the slightest pecuniary compensation for his services. Brit. Ency.

ON THE HUMAN HAIR,

WITH THE CAUSE OF GRAYNESS IN OLD PERSONS.

Nothing that God has made can be deemed unworthy of investigation. Every object in nature, however simple or minute, presents a germ of boundless knowledge to the thoughtful mind. Hence so common, and apparently insignificant a thing as a single *hair*, when carefully examined, offers a wide field of observation to the persevering inquirer.

The naturalist beholds in it the type of all those species of hair, which, under different and most appropriate modifications, clothe the animal kingdoms. In the insect tribes, he observes it under a thousand beautiful and ever-varying forms, decorating and defending caterpillars, butterflies, and moths. In birds, he observes it to assume the form of feathers, which not only embellish and clothe the animal, but give to the wings and tail a most important part of their locomotive powers. Again in the mammalia, he finds it exhibited in endless but most necessary varieties. None are without it, not even the whales.* And in every case the length, quality, and colour, is exactly that which best suits the peculiar wants and instinctive habits of the animal.

Leaving these creatures of a day, he turns to immortal man; and here the same variety, and the same design and appropriate conformity of the objects to the end, are exhibited. No two heads are alike; and most nations, and indeed many families, have their own peculiar characteristicks in this respect. Thus in the European, soft, waving, and full, and of a brownish or chestnut colour; the Mongolian and American, stiff, straight, thin, and black; the South sea islanders, soft, thick, curly, and black; the Negro, crisp, frizzled, short, and black.

The anatomist sees in the structure of a hair, a beautiful and economical piece of mechanical contrivance. Taking the human hair for example, he observes, first, that as an appendage to the skin, it partially participates in its organization. The skin is composed of three layers; the first, or external of which, is called the *cuticle*, or scarf skin, and is transparent and abundantly porous; the second *rete mucosum*—a thick mucous cellular membrane, containing in its cells the colouring matter, which, seen through the cuticle, constitutes the colour of the skin; and the third, or lowest of the series, the *cutis*;—it is from this that the hair springs. Every hair originates in a bulb, seated within the skin, which, in one newly pulled, may be seen with the naked eye. In its passage through the skin, it pierces the layers in an oblique direction, and thus assists in binding them together. Each hair is composed of two distinct parts, an external tube, and an internal pith. The former of these resembles the cuticle in its nature and chymical properties; and like it is of a white colour, whatever may be the colour of the hair itself. The central portion, or pith, is that which gives to the hair its peculiar colour. It is composed of extremely delicate vessels, containing a peculiar-coloured fluid. In this respect, it exactly resembles the mode in which the skin itself is coloured. Indeed, it would appear, that the tube of the hair is composed of condensed cuticle; and the pith, a modification of the rete mucosum.

Each hair is accompanied by a nerve and blood vessels, from the latter of which the matter for the growth of new hair is continually deposited. In old persons, when the nervous power begins to lose its accustomed energy, the colouring matter of the hair ceases to be secreted, and the cellular pith, which contained it, shrivels up, and is sometimes totally absorbed. The tube of the hair is then seen of a transparent whiteness, and in common language a gray head is the result.†

To the chymist, a hair offers an interesting analysis. It has been found by Vauquelin, that black hair is composed: 1, of a considerable quantity of animal matter; 2, a small portion of a white thick oil; 3, another oil, of a greenish colour, in greater quantity than the other; 4, iron—but the form under which it exists is unknown; 5, a few particles of oxyde of manganese; 6, phosphate of lime; 7, carbonate of lime, in very small quantity; 8, silex, or flint, in a large quantity; 9, lastly, a considerable portion of sulphur.

To the inquirer in Natural Theology, who looks

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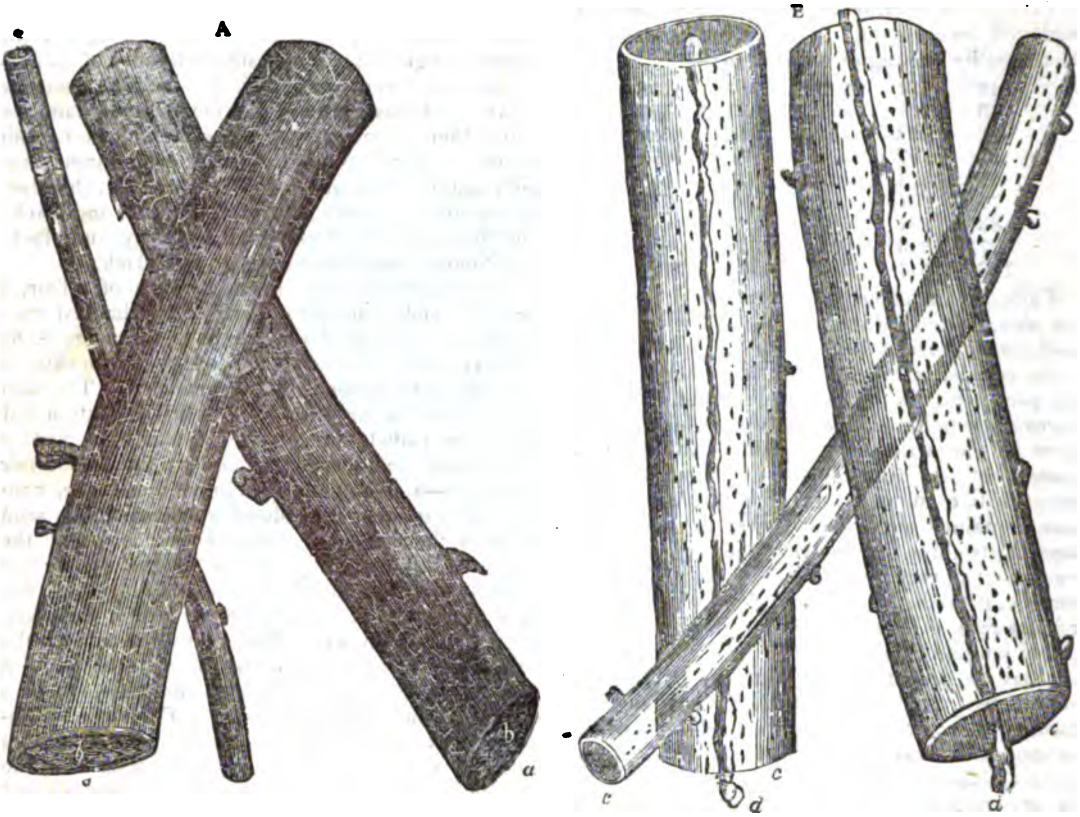
* Fishes and reptiles are totally destitute of hair, and crustaceous animals have it only in particular places, as in the joints of the feet and the margin of the shell, &c.

† Sudden terrour or grief, besides many diseased actions of the skin, will produce the same effect. In the case of terrour or grief it is supposed that the nerve at the root of the hair suffers a paralysis, which stops any further deposition of the colouring matter.



HUMAN HAIR, MAGNIFIED 200 DIAMETERS, AS SEEN BY MEANS OF THE MICROSCOPE.

A The coloured hair of a person 25 years of age: *a* the external tube; *b* the internal coloured pulp. *B* The white hair from a person 105 years of age: *c* the external tube, now seen to be transparent; *d* the remains of the internal coloured pith, separated from the tube, and almost perished; *e* a smaller hair crossing a larger one, to make their transparency more obvious.

abroad into the wide and instructive field which natural philosophy presents, to find objects demonstrative of the design and wisdom of the Creator, perhaps nothing is better adapted for his laudable purpose than the study of the organization and structure of this minute portion of the animal frame. He admires that infinite power of combination which, from *three primitive colours*, has teinted the hairs of millions of different species of living creatures, each one with a colour distinct and peculiar to itself; the individuality of thousands of genera is thus preserved, which, without it, would have been a scene of monotonous and inextricable confusion. Thus captivated, he looks more closely and from a general survey proceeds to a particular examination;—and here new themes for admiration stimulate his industry. He notices the exquisite adaptation of hair to the wants of the creatures—the silky hair of the mole, "the quills upon the fretful porcupine," the mane of the lion, the wool of the merino and the Cachemire sheep—all these he studies, and asks himself, "Whence this interesting variety?" He takes a step further—he observes the difference of hairs on different parts of the same body—as, for instance, those on the mane, fetlocks, and tail of a horse; and he finds in every case that Infinite Wisdom and Infinite Power have been engaged in providing different peculiarities for all those contingencies which would otherwise destroy the happiness of the beings to whom they are now a source of comfort and protection. He is particularly struck with the non-conducting power of hair to heat; for it is by this that hair is so admirably adapted for the winter clothing of animals. Enveloped in hair, the heat of the body is effectually preserved from dissipation—it is shut in with all that certainty which, in the winter season, our furred coats and double blankets so comfortably demonstrate.

Again, he is charmed with noticing the flexibility of hair:—no way impeding the motions of those animals which it clothes—its strength, by which it is cleansed without the slightest fracture—its insensibility to pain; for had it been of a very sensitive nature, it must, from its exposed situation, have been a source of continual pain to the animal.*

OF THE VARIETIES OF THE HUMAN RACE.

ON THE FACIAL LINE.

The *facial line* is the profile form of the human head, and in proportion as that comes nearer, or goes further from, a perpendicular line, that is, in proportion as the forehead projects forward, or slants backward, and the mouth protrudes, so the various tribes are distinguished; that of the negro being most remarkable for this kind of formation, and therefore most resembling the construction of the head of an *ape*.

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* Hair is of a vegetative nature, and hence it grows long after death. Instances are on record, in which coffins, after having been long buried, have been found full of hair, the growth of its dead inhabitant.

When, however, the frontal bone extends beyond the line of the face, it seems to give an appearance of deformity, and is not often seen, excepting in cases of hydrocephalus, with which children are sometimes afflicted.

Those learned anatomists and zootomists who have directed their attention to the science of comparative anatomy, have probably gone too far in imputing a certain construction and form of the head to particular tribes of mankind; at least, when they attempt to draw any *infallible* conclusion from the capacity and form of the *cerebrum*, respecting the natural talent, sagacity, or intelligence of a multitude of persons; for among those of a single tribe, we shall find as great dissimilarity of form and size, as between many of different tribes; and with respect to features, there are some Africans who differ very little, if any, from Europeans, except in the colour of their skin, and whose facial line will be found as correct and symmetrical as that of the most regularly formed head according to the rules of sculpture and painting. With regard to intelligence and talent, all those who have held any commerce with the American Indians, must be convinced of the energy of mind and unsophisticated generosity of temper which these uncultivated people display in all their intercourses of private and political negotiations; in fact, the portrait of Thay Endeneege, one of the chiefs of the most warlike nations, expresses in his countenance the very traits of this disposition.

Habit and climate have their influences on man as well as on other animals; and perhaps to these circumstances the varieties in the species are mostly to be attributed; for there is scarcely a greater difference between a mountaineer of North Britain, and a Calmuck Tartar, than there is between that mountaineer and a native of London. However, to give a correct idea of the physiological distinction that is commonly made between the European and the Negro, and other tribes, the following heads are subjoined; that of the Negro being in the extreme of the variation, that of the European in the form of the best models.

That these variations of form in the features and construction of the human head should be a criterion on which to found any speculative theory respecting the mental qualifications, is a subject rather of a hypothetical nature, and to enter into which would require much actual experiment, if we would be quite correct and certain of the data from which our deductions should be made. Instances occur of great talent and sublime imagination, where apparent deformity has existed; and symmetry has not always been attended by qualities of high mental endowments. What is meant by the *facial line*, as a distinction, will be best understood by the following outlines of the heads of the different portraits. But it must never be forgotten, that the shape of the head, and, consequently, the angle of the facial line, by many uncivilized people, are artificially produced, a fact to which neither sufficient attention has been paid, nor sufficient weight allowed.

THE CAUCASIAN VARIETY.

In the Caucasian variety are included not only the *Turks*, but many countries of Asia, as well as of Europe, the *Egyptians*, *Abyssinians*, &c. The *facial line* of this variety is commonly beyond the perpendicular; that is, the frontal bone extends more prominently than the upper jaw, the cranium is large, face small, oval, and straight; mouth small, and nose rather aquiline, front teeth of both jaws perpendicular, lips rather turned outward, chin full and rounded.

THE MONGOLIAN VARIETY.

The Calmucks, and most of the Mongolian tribes, have round faces and heads, their foreheads falling backwards, so as to make an acute angle with the chin, which is short; the nose small and flat; cheek bones high; eyes depressed towards the nose; thin, black, and almost straight eyebrows. This character is most conspicuous in China, and extends to the Esquimaux, although they live in regions so remote from those of the original tribes in Central Asia.

THE ETHIOPIAN VARIETY.

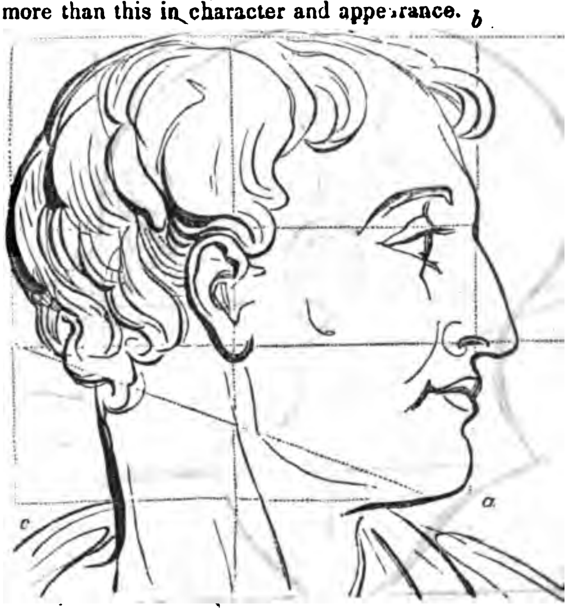
This class of the human species have the facial line generally more receding at the apex than either of the former; the forehead is low, narrow, and slanting; the chin recedes; the eyes are prominent; all the natives of Africa, south of Egypt, belong to this tribe.

THE AMERICAN VARIETY.

The *facial line* of the *native* Americans differs very little from that of the Mongolian tribes, the forehead being low, the eyes deep, and face broad, yet not quite so much flattened; their features are larger, and more distinct and projecting: from this class we must exclude the Esquimaux and the people of Nootka sound, who differ very materially.

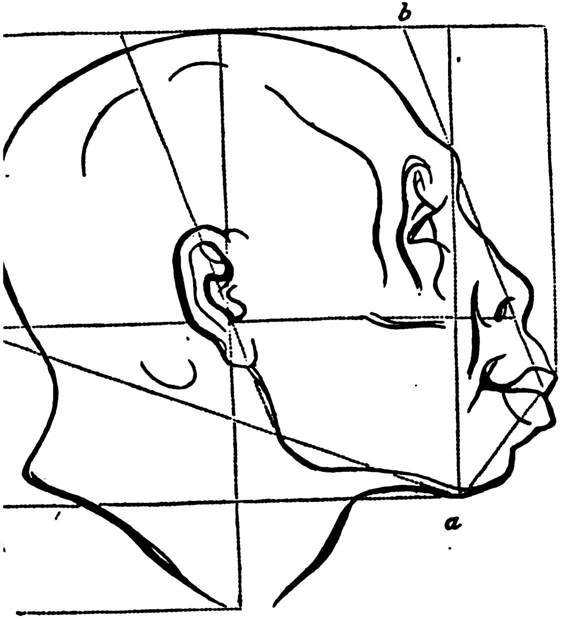
THE MALAY VARIETY.

This class is distinguished by a large mouth, narrow head, the bones of the face large and prominent, nose full and broad towards the apex; the facial line, is for the most part, more inclined than in the other varieties, and approximating, in some instances, to that of an ape: no variety, however, differs more than this in character and appearance.



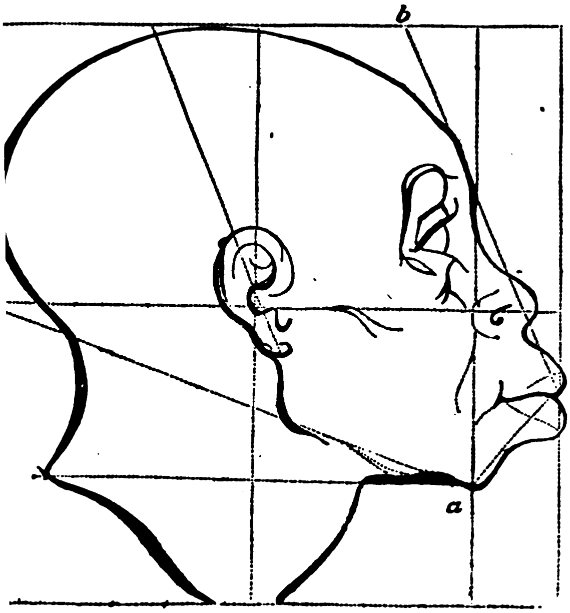
PROFILE OF THE EUROPEAN.

The distinction in this profile is the perpendicular line that passes from the chin at a to the frontal bone at b and which makes a right angle at a c; but in this form there is a maximum and minimum; that is, the angle at a is sometimes obtuse, and in some instances acute; but that which is considered the best proportion, is when it forms an angle of 80°. The Caucasian or Turkish is reckoned in the same description as the European.



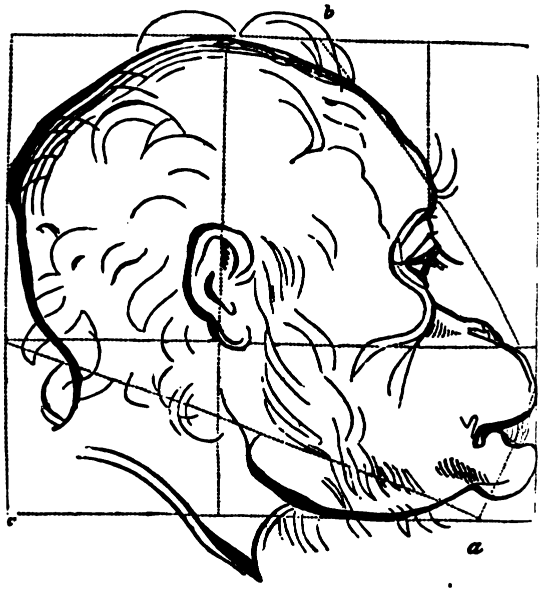
THE CALMUCK, ASIATICK, AND AMERICAN.

In this profile the line a b makes with the line a c an angle of about 70°, which gives a remarkable prominency to the mouth and lips, because the chin recedes; and, consequently, the whole outline appears different from that of the European, and the forehead is more depressed than in the former instance.



THE HOTTENTOT AND AFRICAN RACE.

In this race, the line a b makes a more acute angle with the line a c than in either of the former profiles, and, consequently, comes nearer the form of the ape, or *orang outang*, than either of those previously represented; when the lines a b and a c make the angle, a b c, less than 70°, the profile will be that of an ape, or that which is represented, by the fourth figure, that of the orang outang which in the lines a o and a c makes a very acute angle at a; and the only approach to the figure of the human face lies in the forehead and eyes; the former of which, by not being so flatted and compressed as that of the dog, seems to indicate a species of creature above the canine animals, but very far beneath the human.

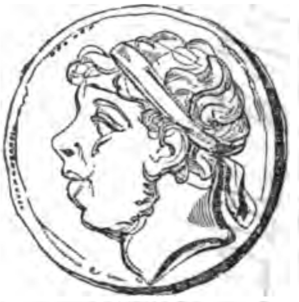


ORANG OUTANG.

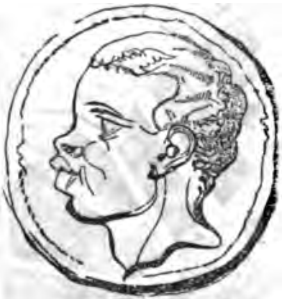
THE GRECIAN ARIADNE AND HOTTENTOT VENUS.

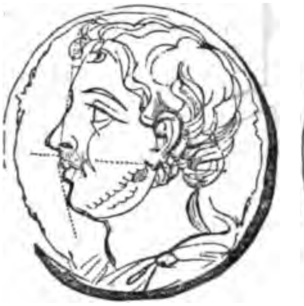
In this *duo in uno* conjunction of contrasted figures, the difference of ideas relative to beauty, is as much at variance as the figures themselves. In the profile of Ariadne, the Grecian beauty, the facial line *a b*, makes, with the line *a c*, an obtuse angle at *a*, the frontal bone projecting forward, while that of the Hottentot Venus retires backward; but whether these antique figures of the Grecians in the profile, are strictly consistent with the lines of beauty, is not determined. The Hottentot Venus, which is above contrasted with this Grecian beauty, was some years since, exhibited in London.

Pharnaces, king of Pontus.

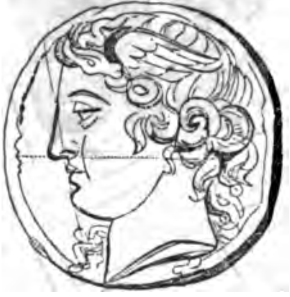


Boichas, king of Mauritania.





Cesar Augustus.



Medusa of Socicles.

BOICHAS.

The head of Boichas, king of Mauritania, is a representation of the Ethiopian character, more particularly the Moorish. The Moors at one period were in possession of Spain and Portugal, but were ultimately expelled by the Europeans. The French have lately made a settlement on their territory, and the Moors seem destined to be still further banished from Europe into the heart of the continent of Africa.

PHARNACES, KING OF PONTUS.

Pharnaces was king of that country lying on the Euxine, or Black sea, which is now the residence of the Calmucks, whose general cast of countenance the head of Pharnaces much resembles. He was subdued by Cesar so quickly, that in his despatch to Rome, giving the senate an account of his success, the conqueror deemed three words sufficient; namely, *Veni, vidi, vici; I came, I saw, I conquered.*

MEDUSA.

Medusa was one of the three Gorgons, three celebrated sisters. She was the only one of the Gorgons subject to mortality. This Grecian beauty was remarkable for a fine head of hair of a gold colour; and according to fabulous history, from her having profaned the temple of Minerva, that goddess, in revenge, turned her hair into snakes, and all who looked upon her, into stones. It was fabled that Perseus cut off her head, and as he carried it through Africa, the drops of blood that fell from it became serpents: from this allegory also the poets have invented the *Gorgon*, and the astronomers a *constellation*. The head of Medusa is considered as a complete model of Grecian sculpture, and therefore exhibits the outline in profile of what that ancient people considered to be a perfect form of the human face.

CESAR AUGUSTUS.

Cesar Augustus was the second of the twelve Roman emperors, and next after Julius Cesar was murdered in the senate house by Brutus, Cassius, and other conspirators. Augustus was the nephew of Julius Cesar. In the reign of Augustus the temple of Janus was shut, all the world being at peace; and at this period Christ, the Saviour of mankind, appeared on the earth. Augustus, after he had conquered the Germans and Gauls, sent an expedition into Britain.

From the Knickerbocker.

THE RINGLET.

The Statesman's cabinet was thickly strown
With parchment scrolls—Ambition's implements:
The hum of passers-by, the low, quick note
Of the rich timepiece, the fantastick play
Of checkered light athwart the dusky room,
The pensive strain, and th' sweet aroma
From his wife's terrace stealing winningly—
Were all unheeded by the man of cares.
He might have known the failure of some aim
Of more than common import in the plan—
Too intricately wove—of his deep schemes;
For fixed in troubled musing was his gaze,
And restlessly he scanned each lettered roll,
Till thrusting back, in very petulance,
A half-read packet on his escritoir,
The spring-lock of a secret drawer was touched,
And the forgotten nook where, in his youth,
He had been wont to store the treasures small
Of every doting wish, sprang forth unbid!
What mystick token stays his anxious gaze?
Whence that warm, glowing flush?—that mournful smile?—
Ay, and the tear in that world-tutored eye?
List, list!—he speaks!—mark well his thoughtful words;
They may instruct thee—for men call him GREAT:—

"RINGLET of golden hair!
How thou dost move my very manhood now!
Stirring, in radiance, there,
As once thou didst above this care-worn brow.

"Methinks it cannot be
That thou art mine; yet, gazing, do I feel
The spell of Infancy,
Like distant musick, through my bosom steal.

"Sweet relick of that hour!
She, who so fondly decked thee, day by day,
As some love-cherished flower,
From the green earth, for aye, has passed away!

"Oh! what unconscious bliss
Filled this lone breast when thou wert floating free,
Wooing the breeze's kiss!
Symbol of early joy, I welcome thee!

"Would that the sunny hue
That gilds thy silken thread so brightly o'er—
Would that life's morning dew
Might bathe my restless heart for evermore.

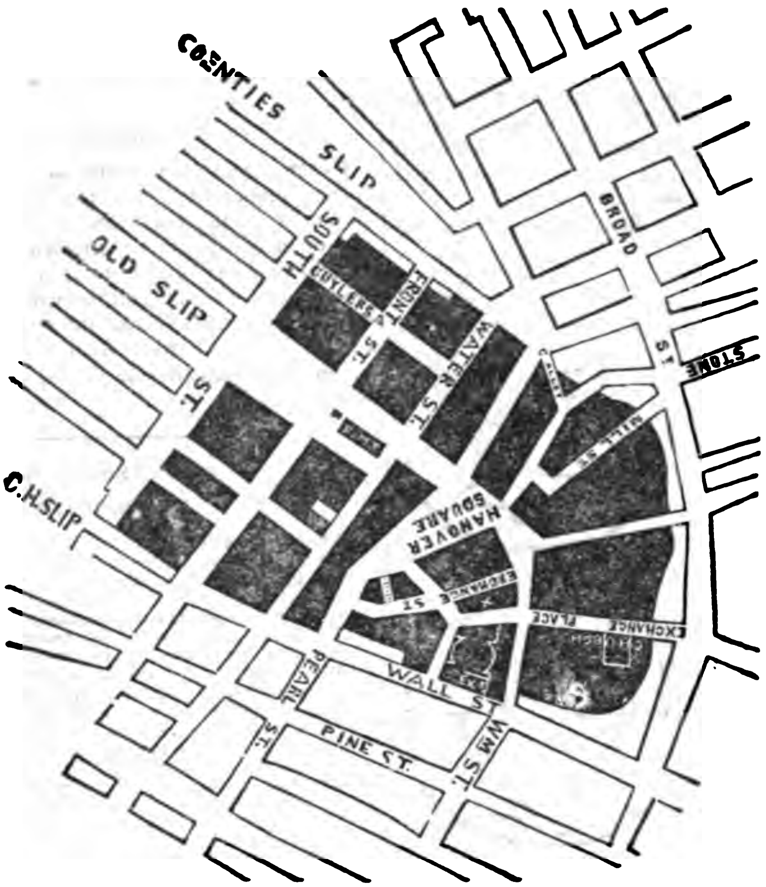
"Unto the spirit-land
Could I, in being's brightness, have been borne—
Had her fond, trembling hand
From my *cold* brow this golden ringlet shorn;

"Not, then, should I thus gaze,
And sigh that time has weakened and made dim
The charm which thou dost raise—
Bright are the tresses of the cherubim!

"Type of life's tranquil spring!
Thy voice is rich and eloquently mild—
The Teacher's echoing:—
'Become ye *now* e'en as a little child!'"

BOSTON, *November*, 1835.

THE GREAT FIRE IN NEW YORK.



Map of that section of the city in which the fire occurred—the portion in *black*, includes what is now the ruins.

The history of the world affords but few instances, of more awful desolation by fire, than that which was visited upon the city of New York, on the 16th and 17th of December, 1835. Indeed, there are but few examples of any calamities, of whatever nature, that have proved more extensive in their effects, or more distressing in their consequences. The destruction of nearly seven hundred storehouses of the first class, filled with the most valuable goods, covering about twenty acres of land, and giving employment in their various connexions to several thousand persons, is entirely unprecedented in the history of the United States. It is not, however, upon the individuals directly employed, nor upon the lessees or the owners of the buildings, nor upon the merchants, that the chief burden of this calamity falls; but it is the thousands of widows and orphans, who were dependant upon the dividends of their little stock in the insurance companies for their daily bread, who are most afflicted by this unpitying devastation; and next to them the manufacturer in almost every district of the United States, however remote, is most irremediably and unfortunately despoiled of his earnings. But independent of the affliction of private loss, this calamity seriously affects every species of business, and every ramification of trade in the country: it is the fountain head that has been so dreadfully ravaged, and the whole nation feels the shock.

New York seems ever to have been signally afflicted with conflagrations, and before giving the particulars in relation to the present deplorable one, perhaps it would not be uninteresting to present the following historical summary, which we copy from the New York Sun:—

The memorable fire of London, in 1666, desolated that city to the extent of 436 square acres, consuming 400 streets, 113.000 houses, and 86 churches, but nearly two thirds of these buildings being constructed of wood, and the productions of the arts and manufactures of that period being far inferior in value to those of the present age, the actual amount of property then destroyed, bore comparatively little proportion to that which occupies the same topographical space in modern commercial cities. This result will also apply to the fires which have heretofore occurred in New York, the chief of which we shall enumerate.

On the 21st of September, 1776, a fire occurred which consumed the Trinity church, the Lutheran church, and nearly one thousand houses; but these were mostly of little value compared to those now standing in almost any part of the city, and the whole loss was estimated at less than one million of dollars. On the 7th of August, 1778, more than 300 houses were consumed by fire; and no other very destructive conflagration occurred in the city until the 9th of December, 1796, when a fire broke out in Maiden Lane which burnt between 60 and 70 houses, about half of which were stores. This was followed, nine days afterwards, by a fire which began at 104 Front street and burnt about 40 houses. But to show the rapid growth of commerce in this city within the last forty years, we need only state that these forty houses and their contents were valued at only $106,700! which is far less than half the amount of merchandise consumed during Wednesday night in several of our principal stores! On June the 5th, and again December 15th, 1810, there were some heavy fires; and on May the 19th, 1811, one commenced at the corner of Duane and Chatham streets which destroyed 90 or 100 houses. Two others occurred on October the 29th and November the 3d, in the same year. In 1813, August the 12th, there was a severe fire in Beekman street; and on the 31st of the same month, 21 houses were burnt on Dover and Water streets. On December the 4th and 5th, 1816, there was a very ruinous fire in Water street, the estimated loss from which was $200,000.

In 1817, the principal fires occurred on January 15th, in Chatham street, and on March 3d, in Broadway and Wall street. Between this period and 1828, no very remarkable conflagrations appear to be recorded; but it appears from the report of the chief engineer to the Common Council, that in 1828 there were 131 fires, occasioning a supposed loss of $680,402, including the Bowery theatre, which was burnt on May the 28th of that year. There have been several other destructive fires in this city, the dates of which we have not at present the means of ascertaining, among which was one that occurred on the site of the present Fulton market, one which destroyed the Park theatre, and another that burnt many valuable warehouses in Front and Water streets. The destruction of the entire block bounded by Vandam, Varick, and Charlton streets, on the 4th July, 1831; and that which consumed nearly ten squares of buildings, with 50 horses, in Greenwich village, in September, 1832, must be yet vividly remembered by our readers. The smaller class of fires, such as more recently occurred in Gold street, Spring street, and in twenty other parts of this seemingly fire-devoted city, both time and space would fail us in enumerating. But that one which was the most destructive of all others, that has occurred within the recollection of the present generation, was the late desolating conflagration in Ann, Fulton, and Nassau streets, in which about forty buildings, mostly of the first class, worth with their contents, more than a million of dollars, were soon reduced to smouldering and unsightly ruins.

But what was even that dreadful event, making though it did, a more frightful chasm in the heart of New York, than any which had hitherto befallen her—what was even that when contrasted with the long and expanded ravages of the destroyer now spread forth to the dismay of her citizens, and to the terrified astonishment of the stranger within her gates? It may well be doubted whether all the destruction by fire, which has occurred in the city since its foundation, taken in an arithmetical aggregate, would greatly exceed, if more than equal, the immense loss which has been occasioned by this one calamity. We have attempted the best calculation of this question which our data could afford, and we are of opinion that all the preceding fires in this city, of which we have any account, have destroyed only about twenty-three millions of dollars, which includes a liberal annual average of loss over and above that occasioned by fires of the larger class. This ONE fire probably cannot be repaired for fifteen millions.

On the night preceding this unequalled calamity, a fire broke out in Water street, which eventually destroyed eight houses and other property there to the amount of $50,000. Before these flames were extinguished, others were seen to ascend in an upper part of the town which proved to be Chrystie street, in the square between Delancy and Rivington streets, by which 11 houses were reduced to ashes, and many poor shivering families were driven out into the most severely piercing wind that has been known in this latitude for many years. So intense, indeed, was the cold, that many of the engines were rendered inoperative by the freezing of their hose, to say nothing of the exhaustion of the firemen. These two fires, however, were only gentle preludes to the solemn requiem which was soon to be heard —mere symphonies to the grand anthem of desolation.

At nine o'clock on the night of Wednesday, the 16th of December, 1835—a date which will long be memorable in the history, not only of New York, but of the nation of which she forms the first commercial emporium—smoke and flames were seen to issue from a five-story building in Merchant street, formerly Hanover street, in the vicinity of the Merchants' Exchange, and in a part of the city the most crowded with wholesale warehouses and stores, filled with the most costly productions of foreign and domestic manufacture. The flames soon leapt forth in fury through every aperture, and seized on the two adjoining houses for their immediate prey. The street being narrow and confined, and a fierce north-east wind having arisen with continually-increasing force, the flames embraced the opposite houses, until the whole triangular block, formed by Wall, William and Pearl streets, became one lofty altar of waving fires. Taking then the direction of Wall street, below Pearl, on the one hand, and Pearl street, below Wall, on the other, the flames rolled on, mocking all human efforts to restrain them. Advancing thus in two grand divisions, the conflagration, as contrasted with the red masses of buildings which they alternately illuminated and wrapped in huge volumes of smoke, conveyed to us the idea, on the elevated position from which we some time viewed it, of some fabulous monster of destruction, waving its wings over its helpless and devoted prey. In Wall street, after destroying the Phenix buildings, it pursued its way to Water street, Front street, and at length as the morning dawned, to South street, adjoining the East river. But advancing at the same time, through Pearl street, on both sides, towards Hanover square, it crossed and speedily devoured Govencur lane, Jones's lane, and the whole of Front and Water streets, that lay between Wall street and Franklin market. In the meantime, it was furiously extending through Exchange street and Exchange place to William street, and to all the buildings in the rear of the Merchants' Exchange. This magnificent and beautiful edifice, the pride of our city and country, for the purity and grandeur of its architecture, it was hoped would rear its dome in the sky, though all around it should become a scene of desolation; for there being no flames between it and the course of the wind, it seemed fortunately secure from any imminent danger. And so much confidence was reposed in this, that it was selected as the grand depot of the dry goods and all other kinds of merchandise which could be rescued from the adjacent streets, and with which its great hall was completely piled. Every precaution, too, was taken to preserve it, by conveying hose to its roof, and by spreading wet blankets along those parts of its windows and cornices the most exposed to heat. But all proved vain! At about one o'clock in the morning it took fire, and although the flames preyed on it but slowly for some time, they at length burst forth from its roof and dome, and

> "Weaved a pall of ruin o'er its walls."

For full half an hour, the flames arose in pyramidal columns from its dome, up to an immense height in the troubled sky, and rendered it a most sublime though fearful object. But before the unhappy persons who had made it the refuge for their property from the terrible enemy that was abroad, could again rescue scarcely an article, its dome fell in, burying beneath it the beautiful statue of HAMILTON, so recently erected to adorn it!

After crossing William street, the fire continued in the direction of Old Slip, and communicated to several vessels; their crews, however, were able to subdue it. The course of the fire in the direction of Broad street, was arrested by blowing up the buildings not yet ignited, with gunpowder. The dark surface upon the map, indicates the extent of the ruins. Within that limit, but one building remains standing. It will be observed that Broad street was not reached, and a considerable portion of the south side of Wall street was preserved. The whole is included in that triangular section, formed by Broad and Wall streets, and the East river. The fire raged sixteen hours, and was arrested by the aid of gunpowder. The engines were disenabled by the extreme cold weather. The only public buildings destroyed, are the Merchants' Exchange, the Reformed Dutch church, and the Franklin market. The post-office, and the publishing offices of several papers, were comprised in the ruins. The whole loss is estimated at from ten to fifteen millions of dollars. This falls chiefly upon the insurance companies—they, however, combined, have not that amount in capital. It is presumed, nevertheless, that they will be able to meet the whole of their responsibilities, through the tender mercy of their creditors, and the aid of the banks, and of the state and city treasury. To the merchants, whose business has been deranged and broken up, and are under heavy bonds to the customs, Congress has already taken measures to give an extension of time. Through the manifest sympathy of the whole country, and its apparent readiness to sustain the sufferers under this awful calamity, the publick credit of the city will be sustained, and business readily restored to its accustomed channels and pristine character.

THE OSTRICH.

It has been thought that after depositing its eggs in the sand, this remarkable bird generally leaves them to be hatched by the genial rays of the sun—this is an errour.

"On approaching the nest," says the Rev. S. Broadbent, "we saw the female ostrich sitting upon it; and though she had been disturbed before by the Hottentots, she remained till we were very near, and then ran off at the report of two guns which were fired. The ground was sandy for several miles round, and covered with thinly scattered bushes. There lay a great number of loose ostrich feathers about the nest, which appeared to have come off the female while sitting; and she had the naked appearance which domestick fowls have at such times.

"The eggs were forty-two in number, arrayed with apparent exactness, sixteen in the middle of the nest, and on these the ostrich was sitting. The remaining twenty-six were uniformly in a circle, about three or four feet from those in the middle. They were quite fresh. The Hottentots say the ostrich provides them against the hatching of those in the middle, when she would break them, one after another, and give them to her young ones for food; and that by the time they are all thus disposed of, the young ostrich will be able to go abroad with their mother-instinct. The ostrich watched the visiters from a short distance for an hour. The eggs weighed three pounds each, and measured seventeen inches in circumference."

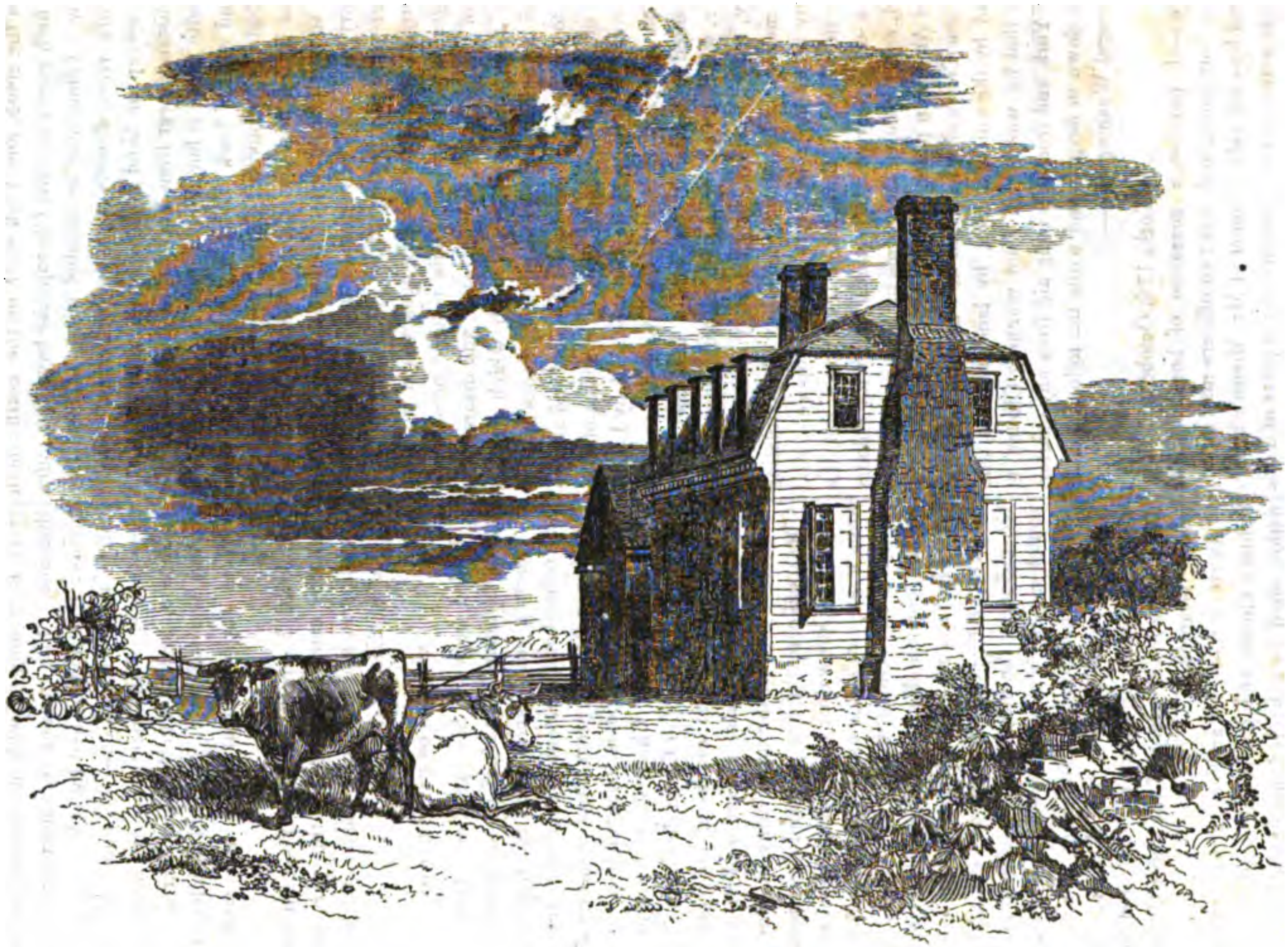
As no roads are so rough as those that have just been mended, so no sinners are so intolerant as those that have just turned saints.

When dunces call us fools, without proving us to be so, our best retort is to prove them to be fools, without condescending to call them so.

Pedantry crams our heads with learned lumber, and takes out our brains to make room for it.

THE KNICKERBOCKER: *December*, 1835.

This very excellent periodical has reached the conclusion of its 6th volume. The present number contains an index and a very neat vignette titlepage. The matter of the number before us we think inferiour to many of its predecessors, still, the fact only leads us to expect something as far superiour in the next. This magazine is scientifick, and didactical, philosophical and poetical, and usually contains about one hundred pages, monthly, of as interesting and instructive original matter as one can reasonably desire.



MOORE'S HOUSE—Yorktown, Va.

In which Lord Cornwallis signed Articles of Capitulation to the Combined Amerrcan and French forces, Oct 19th, 1781.

according to the common meaning and acceptation of the words. Granted.

Done at York town, in Virginia, October 19th, 1781.

CORNWALLIS,
THOMAS SYMONDS.

Done in the trenches before York town, in Virginia, October 19th, 1781.

GEORGE WASHINGTON,
Le Comte de ROCHAMBEAU,
Le Comte de BARRAS,
En mon nom & celui du
Comte de GRASSE.

The success of the siege of York town, it is generally understood, decided the revolutionary war. "The infant Hercules," said Dr. Franklin, "has now strangled the two serpents,* that attacked him in his cradle. All the world agree that no expedition was ever better planned or better executed." For the "great glory and advantage" of the surrender of York, Washington afterwards acknowledged himself chiefly indebted to the French alliance. And in the proceedings of Congress upon the matter, it was amongst other things: "Resolved, That Congress cause to be erected at York town a marble column, adorned with emblems of the alliance between the United States and France, and inscribed with a suscinct narrative of the events of the siege, and capitulation." The details of the siege the reader will find on page 103, Vol. III. Family Magazine. The precise situation of Moore's house is also there exhibited on the map.

COMBUSTIBILITY OF A DRUNKARD'S BLOOD.

On page 245, Vol. II. Family Magazine, we related a fact that a man was taken up dead in the streets of London, whose brain, on examination, was found impregnated with gin. The gin was perceptible both to the sense of taste and smell, and readily ignited on the application of flame. It subsequently appeared, that the man had drunk a great quantity of gin on a wager, which caused his death.

We often hear people say, *ladies* particularly, that the wine or the punch, or whatever the drug may have been, "has got into my head!" Yet, that remark is commonly considered a mere figure of speech, illustrative of the sudden inspiration which they experience on taking a draught of alcohol; and as such, indeed, is perhaps forgotten as a matter of no importance. But it is a fact, it seems, long known to physiologists, that the *frontal sinus* of a tippler, is the depository of alcohol; and that nature has furnished him with a *depot* there, which, like the camel's extra stomach, accommodates him with the desirable stimulus, while he is absent from the *trough*. Although he cannot apply it, as the camel does his store of water, yet, the alcohol is in the *sensorium*, just where it should be, to make an individual foolish and unnatural.

But it appears, that it is not only the delicate fibres of the brain, that the poison attacks, but it impregnates the blood and insinuates itself into every artery and vein in the system; and thus amalgamated, both LIQUID DEATH and the VITAL PRINCIPLE circulate throughout the human body!

This fact is attested by a recent discovery, made by a Mr. Hanson, a student of medicine, at South Berwick, Maine. An habitual tippler staggered into the office where Mr. Hanson was a student. His eyes were inflamed, his face swollen and flushed, and his lungs sent forth an odour resembling more the perfume of a rum-cask than the breath of a human being. He had drunk continually for the last fortnight; and within the last five days he had swallowed two gallons of rum. Mr. Hanson informed him that he was in danger of death by spontaneous combustion; and persuaded him to attempt to obviate the danger by being bled. A pint of blood being drawn, a lighted match was applied to it, and to the astonishment of the beholders as well as the votary of Bacchus, the blood immediately ignited, and continued to burn, with a blue flame, for the space of twenty five or thirty seconds!

Mr. Hanson thus proclaims the fact:—

The above experiment, which resulted in a *phenomenon* thus brilliant, and which I had never noticed either by observation or in authors, was not only witnessed by myself, and the subject of it who sat mute, astounded, and in breathless silence, but by several respectable gentlemen, together with a worthy and respected physician, my tutor, who were present, and who, in the subjoined certificate, vouch for the authenticity of the fact I now submit to the publick.

JACOB C. HANSON.

To the Publick.—We, the undersigned, residents of South Berwick, Me., do hereby certify that we were present and witnessed the experiment above described.

CHARLES TRAFTON,
JOHN G. WEBSTER,
JOHN KENNARD.

As we cannot judge of the motion of the earth, by any thing within the earth, but by some radiant and celestial point that is beyond it, so the wicked, by comparing themselves with the wicked, perceive not how far they are advanced in their iniquity; to know precisely what lengths they have gone, they must fix their attention on some bright and exalted character that is not of them, but above them. "When all move equally," says Paschal, "nothing seems to move, as in a vessel under sail; and when all run by common consent into vice, none appear to do so. He that stops first, views as from a fixed point, the horrible extravagance that transports the rest."

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* The armies of Burgoyne and Cornwallis.

BOTANY.

THE FLOWER.

The flower is an organ composed of several distinct parts and generates and matures the seed, by which the plant is enabled to continue its species.

Flowers are produced from buds, which, like *leaf-buds*, are formed in the *axillæ* of leaves, called *bracteæ*. These differ commonly from the ordinary leaves of the plant, either in size, colour, or form; but observation and knowledge can alone enable the botanist to distinguish in all cases, true bracteæ from leaves.

Flower-buds consist of an assemblage of rudimentary leaves surrounding a central point, which grows into an axis, called the *flower-stalk*, or peduncle; this often grows for some length before any of the leaves *expand*, or before the bud *opens*.

These rudimentary leaves have the power of producing in their axillæ other buds, with their enclosed leaves and axes.

If these secondary buds are not *produced* or *developed*, the principal one brings forth one flower only, which is always at the end of the flower-stalk because the axis does not, naturally, grow longer, after the inmost set of leaves, which forms the flower, begins to expand. *Ex.:* pæony, tulip, &c.

The manner in which the flowers are arranged on a plant, according as the various buds are produced and expanded, is called the *inflorescence*, or mode of flowering.

In order to understand this, the beginner must constantly remember, that *all* regular buds are formed in the axillæ of leaves, or bracteæ; and that the centre of a bud grows into an axis or stalk, bearing the leaves enclosed in that bud, the innermost of which constitute the flower; while other buds giving birth to new stalks, leaves, and flowers, may, or may not, be produced in the axillæ of the outermost, as they are unfolded on the original stalk.

The principal forms of inflorescence are:—

When the principal stem of the plant produces a flower-bud, and then ceases to grow, the flower is *solitary and terminal; Ex.:* pæony, and pheasant's-eye, herb Paris, &c.

When one flower-bud is produced in the axilla of a leaf, and the principal stem continues to grow past it, the flower is said to be *solitary and axillary: Ex.:* yellow pimpernel, &c.

When all the buds of a newly-formed axis unfold into flowers, each having a stalk, the inflorescence is called a *raceme; Ex.:* enchanter's-nightshade, water-betony, brookweed, hyacinth.

If, in the same circumstances, the flowers are *sessile*, or very nearly so, they form a *spike; Ex.:* lavender, corn, saintfoin, agrimony, diers' weed, plantain, butterfly orchis, mullein, yellow cotyledon, &c.

The principal axis of a spike and its derivatives is called a *rachis*.

There are a great variety of *spikes*, according as the flowers are *alternate* or *verticillate*, on the principal axis, and according as they are distant or crowded on it; if they produce secondary spikes, with a similar arrangement, the principal one is said to be *compound*

A spike, the sessile flowers of which are very crowded, the principal axis thick and fleshy, and enveloped in a large coloured bractea, is called a *spadix*, and this last a *spathe;* this is peculiar to the arum, calla, dracontium, and many palms.

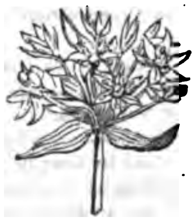
When the bracteæ on the principal stalk are close, and overlap one another, or are *imbricated*, with the flowers sessile in their axillæ, the spike is termed an *amentum* or *catkin*, and the peduncle is always *articulated* with the main stem of the plant; *Ex.:* willow, oak, birch, poplar, walnut, beech, and many other trees.

Catkins are generally *pendent*, or hang down; the spike, in general, is erect.

When a principal flower-bud produces others without lengthening its own, or the principal stalk, a *head*, or *capitule* is formed. *Ex.:* scabious, sheep's-bit, clover, kidney-vetch, &c.

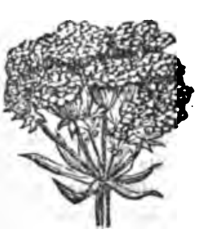
One form of head must be perticularly noticed, from its being the characteristick of an immense tribe of plants called *compositæ* or often, though improperly, *compound flowers*, because the head resembles a single flower in its appearance.

In this inflorescence, the top of the flower-stalk is swollen out into a sort of cushion, called a *receptacle*, on which are crowded a multitude of small sessile flowers, called *florets*, which will be explained in another place: these are all surrounded by the outer bracteæ composing the bud. which are imbricated, and form what is called *involucrum: Ex.:* leontodon, daisy, aster, sunflower, thistle, hawkweed, artichoke, &c.



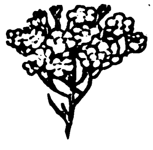
When the principal axis is but little lengthened after the opening of the bud, and the other flowers it contained have stalks, an *umbel* is formed: this is either *simple* or *compound*.

A *simple umbel* has the stalks springing from the same part of the principal one, and each bears but one flower; *Ex.:* flowering rush, agapanthus, many geraniums, wild garlick, &c.



In the *compound umbel*, the stalks of the secondary buds bear smaller umbels, into which these open.

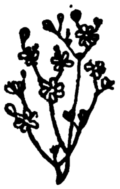
The compound umbel is the characteristick of a very large tribe of plants, hence called *Umbelliferæ*, or *umbel-bearing;* of which the carrot, parsnip, celery, parsley, hemlock, coriander, &c., are familiar to every one.



A *corymb* is a raceme, the lower flowers of which have long stalks, and the upper, short ones, so that the flowers are nearly on one level; *Ex.:* star of Bethlehem, lady's-smock, common hawthorn or may, yarrow or milfoil, wildservice-tree, &c.

All the foregoing forms of inflorescence are considered as modifications of the spike or raceme, the rachis being *undeveloped*.

A *panicle* is a raceme, the flower-buds of wh have, in growing, produced others, and consequently, the stalks are branched; *Ex.:* oats, and many grasses, cineraria, &c., woodrush yucca, and agave, meadowsweet, &c.



When the middle branches of a panicle are longer than the rest, it is called a *thyrsus; Ex.:* lilack, privet, horse-chestnut, &c.

A *cyme* resembles an umbel, in having the flowers level at the top, but the stalks spring from different points of the principal one; *Ex.:* elder, oleander, &c.

There is one variety of the cyme, in which the flowers are produced in the axillæ of *opposite* leaves; and, being crowded, they appear to form a *whorl* of flowers round the principal stem of the plant: this is one characteristick of a large tribe of plants, of which the mint, thyme, sage, monarda, deadnettle, &c., are well-known examples.

In the vine, the rachis, or principal axis of inflorescence, frequently produces no flower-buds at all, but becomes lengthened, and acquires the property of turning round any neighbouring body, and thus assisting to support the plant.

This *false tendril* must be carefully distinguished from the true one, which is always a prolongation of the midrib of a leaf; whereas the one in question springs from the axilla of a leaf, and thus indicates its origin.

It is this kind of discrimination between the various forms the different organs of plants assume, that is so important to the advancement and knowledge of botany, and to which the attention of the rational student cannot be too frequently called.

OF BRACTEÆ AND THE INVOLUCRUM.

The leaf, in the axilla of which a flower-bud is produced, is called a bractea, as has been already mentioned.

The most remarkable sort of bractea is that called a *spathe*, which has been already noticed in describing the species of inflorescence, termed a spadix.

Bracteæ vary greatly in appearance; most usually they are green and herbaceous, like other leaves; but the spathe is coloured, and so are the four bracteæ which surround the true flower of the hydrangea. Common observers take these for the flower itself, which is small, and escapes observation.

The spathe, or bractea, of many plants is membranous, as the narcissus, the wild garlick, flowing rush, &c.

The *outer* set of leaves composing a flower-bud are generally *alternate*, and as the axis grows, they open singly on different parts of it; these are also bracteæ, because other *flower-buds* are formed in their *axillæ*, as has been explained: but when no such secondary buds expand, these bracteæ appear like small leaves on the principle flower-stalk, as may be seen in the snowthistle, corn-marigold, centaury, oxeye, and many others.

When two or more bracteæ, instead of appearing singly on the principal flower-stalk, are opposite or verticillate, they form an *involucrum*.

There is an involucrum at the point where the stalks of the umbel branch out, in many umbelliferous plants, as in the wild carrot, samphire, water-parsnip, &c. (See figures of umbel.)

The large bracteæ immediately below the flowers of the wood anemone afford a good example of this organ.

The head of composite or compound flowers, as they are commonly called, is always surrounded by an involucrum of many leaves, which are *imbricated*, as has been mentioned; *Ex.:* dahila, aster, marigold, &c.

The part of the plant called the artichoke (Cynara scolymus) which is eaten, is the base of the leaves of the involucrum and the receptacle of a flower like a thistle, of the order Compositæ.

Another remarkable form assumed by bracteæ, is the *cupule;* or the cup of the acorn, the fruit of the oak, &c. In the filbert the cupule preserves the limbs of the separate bracteæ distinct, though these are united at the base: in the beechnut the bracteæ form a tough shell nearly enclosing the fruit: the berry of the yew is a bractea entirely altered in texture, the real fruit being the enclosed *seed* as it is called.

The *inner* elementary leaves of the flower-bud are always whorled, or verticillate; and constitute, when expanded, what is commonly called the flower: as soon as these begin to open, the axis, which has hitherto formed the flower-stalk, ceases to grow, and the top of the stalk, or part where these leaves are joined to it, is called the *receptacle.*

There are rarely less than two, and commonly four whorls or verticils of these inner leaves.

The flower, properly speaking, consists of two or more whorls of elementary leaves, which differ in form and appearance from all others, and are called *sexual apparatus*, because, by their means, the seed of the plant is formed and matured so as to become capable of growing: these are commonly surrounded by one or more whorls of leaves differing from the inner set, and unlike other leaves, which are called *floral envelopes*, or *perianth*, but are not essential to the flower, as will be further explained.

CHYMISTRY.

SILICON.

Although silicon, in combination with oxygen, is one of the most abundant substances in nature, so much so as to entitle it to be considered the basis of the inorganick, as carbon is of the organick creation, it is only very lately that the art of chymistry has succeeded in separating it in small quantities, by difficult and complicated processes.

Silicon has been obtained in the form of a solid, in a disintegrated state, of a dark-brown colour, and without metallick lustre. It does not conduct electricity, and is incombustible either in air or oxygen gas. It may be exposed to the strongest heat without fusing or undergoing any other change. It decomposes water, and becomes converted into oxyde of silicon, or selix, by union with its oxygen. Although much uncertainty still prevails in all experiments with this difficultly-obtained element, there is reason to suppose that, in the state of oxyde, it is combined with its own weight of oxygen, and that its equivalent is 8.

SILICON AND OXYGEN.

Silex enters into the composition of most earthy minerals, and exists in a state of almost perfect purity, in the form of colourless rock-crystal or crystals of quartz. By heating these substances redhot, and throwing them into water, they may be disintegrated and reduced to fine powder by pounding. Sufficiently pure silex may also be obtained by calcining common flints at a low red heat. They may then be easily reduced to powder. In this state they must be mixed with four times their weight of carbonate of potash, and fused in a crucible, by a strong red heat. A strong effervescence will take place; after which the heat must be urged till the materials enter into complete and quiet fusion. The compound may be dissolved, when cold, in water; and the alkaline solution, after filtration, dropped gradually into diluted sulphurick or muriatick acid. An abundant precipitate will subside, which, after pouring off the liquid which covers it, must be thoroughly washed till the water comes away perfectly tasteless: it must then be dried.

Silex thus obtained is a perfectly white and tasteless powder, which feels harsh between the fingers. Its specifick gravity is 2.6. It is insoluble in water, and is not acted upon by any acid except the fluorick, whose properties will be hereafter described. When first prepared, and minutely divided, it is taken up by solutions of pure potash or soda, but not by the volatile alkali ammonia.

Silex, in combination with the fixed alkalis, forms the basis of that inestimable product of art, glass. When one part of very pure sand is ignited with three of carbonate of potash, a compound is formed, which is very soluble, and deliquesces (attracts moisture) in the air. When these proportions are reversed, and three parts of sand and one of carbonate of potash are fused together, the product is insoluble in water and all the acids except the fluorick, and possesses the well-known properties of glass. Its purity depends upon the purity of the ingredients employed in its manufacture. Green bottle-glass is made of impure materials; such as sand, which contains a considerable proportion of iron, and the commonest kind of soda called kelp. Window-glass is made of pure alkali, and sand which is free from iron; and for plate-glass the utmost care is taken to provide both the materials in their purest forms.

BORON.

When equal parts of the metal *potassium*, and very pure boracick acid, are heated together in a copper tube, at a temperature of about 302° Fahrenheit, they suddenly become redhot: the metal disappears, and, when the product has been washed with warm water, a greenish-brown or olive-coloured substance is obtained, which is boron.

It is insoluble in water, tasteless, and does not effect the colour of blue vegetables. It may be exposed to the strongest heat in close vessels without undergoing any change: but when heated to about 600° Fahrenheit in the open air, it burns vividly, absorbs oxygen, and is converted into boracick acid. It is a non-conductor of electricity.

BORON AND OXYGEN.

Boracick Acid.—There is considerable discrepance in the results or experiments upon the quantity of oxygen which is absorbed by boron during its combustion; but there is reason to think that 100 grains condense 266.6 grains of that gas which is in the proportion of 6 to 16: so that, supposing the acid to be a compound of two equivalents of oxygen, the number for boron will be 6, and that for the acid 22. Boracick acid may be obtained by dissolving a given weight of a salt called *borax* (which is imported from India in a rough state under the name of *tincal*) in boiling water; and adding half its weight of sulphurick acid, previously diluted with an equal quantity of water. Upon evaporation of the solution and cooling, shining, scaly crystals will be precipitated, which is the substance in question. It is also found native in the neighbourhood of volcanoes.

It is destitute of smell, and possesses very little taste. It is sparingly soluble in water, and the solution reddens vegetable blue colours; and what is very singular, it also reddens the yellow colour of turmerick in the manner of alkalis. It is soluble in alcohol, and communicates a beautiful green colour to its flame. It fuses when heated, and gives off its water of crystallization to the amount of about 44 parts in the hundred. It is therefore probable that the crystallized acid is composed of

1 equivalent acid . . .	22
2 ditto of water . . .	18
	—
	40
	—

THE FIVE SENSES.

THE SENSE OF SIGHT.—No. V.

DEFENCES OF THE EYE.

The "loving kindness" of the Creator is beautifully exhibited in the provisions he has made for the preservation of life amidst the multifarious dangers which hourly threaten it with extinction. To notice only a few of the more obvious instances, as they float on the surface of his oceanick wisdom, we may hold up to admiration the well-compacted strength, the wind-like fleetness, and the ready sagacity, which combine to give the lion the supremacy, alike of forests, deserts, and cultivated plains. An impenetrable shell saves the torpid and slow-going tortoise from the crush of the elephant's foot; and, in the hour of need, an armature of spines, like threatening spears, couching in every direction, preserve by intimidation, the weak and unoffending hedgehog from a host of powerful assailants. Upon our heaths the furze-bush stands as a fortress to the gentle linnet against the pursuit of the rapacious hawk; and, in tropick lands, the pendant nests of the loxia and Baltimore birds swing from the end of graceful boughs, like the bunches of *sour* grapes in the fable, to set on edge the teeth of the wily serpent, who would fain destroy the tender broods, but dares not trust his weight to the fragile branches. In our retired streets, when a family of loquacious sparrows squat down to discuss their roadside morsels, a lonely fellow, chosen from the party, sits high up on the corner of some adjacent spout, as a sentinel, to warn them of a coming stone or an advancing cat; and when the plenitude of summer flowers, and the insects which make each opening bud a nation, are exhausted;—when the harvest-fields cease to yield their increase, and the gray mists of coming winter clothe the autumnal eves with sadness, then millions of the feathered tribes, borne on strong aerial wings, cross seas and deserts to seek afar off a warmer sun and richer lands. Innumerable genera of beetles—"the creeping things of the earth,"—covered with thick plates of shelly armour, return hollow sounds, instead of sweet morsels, to the eager bills of hungry birds. One of these "armed knights," called the bombardier, puffs at his enemies a cloud of poisonous smoke, and walks quietly away in the very face of half-suffocated foes. But to make an end of examples which are infinite in number as they are infinite in wisdom, we shall only notice the cuttle-fish, which in the eyes of ignorance, would appear to be a very helpless creature, but is, in reality, as well defended as a king by loyal subjects. This inhabitant of the waters, the moment he is menaced by any danger, discharges a quantity of intensely black fluid, in the centre of which he rests, and by which he becomes suddenly invisible. This fluid forms the basis of Chinese, or, as it is more commonly called, Indian ink.

The conservative providences of God are, however, no less evidenced in the preservation of particular organs, and little and apparently insignificant parts of animals: thus, the heart is preserved from rupture by the great strength of its twisted fibres, and from external injury by the breast-bone and ribs; the bowels from corrosion by a soft covering of mucus; the teeth from too rapid wear, by their enamel; and the eye from a multitude of distressing evils, by various admirable contrivances, which it will now be our business to describe.

1. THE ORBIT OF THE EYE.

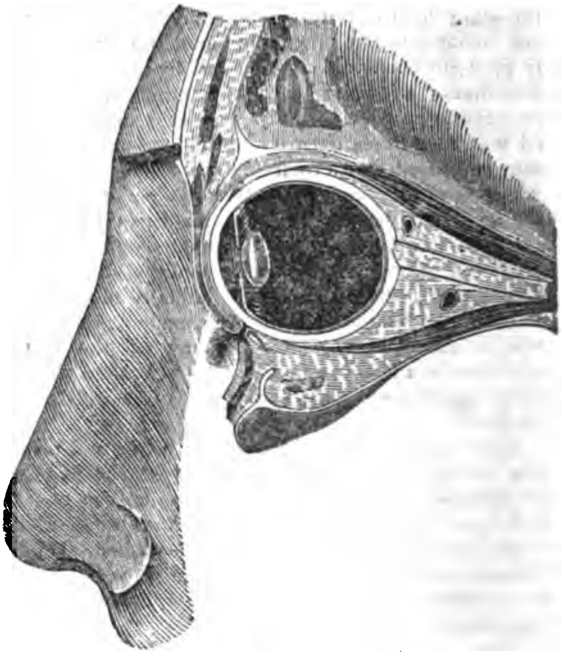
The first defence of the eye consists in its lodgement within the walls of a strong bony chamber, called the orbit. This cavity is composed wholly and in part of seven curvilinear bones, severally called *os frontis*, *os sphenoidale*, *os ethmoides*, *os maxillare*, *os malæ*, *os unguis*, and *os palati*.

The edge or rim of the cavity is formed by the os frontis, os maxillare, and os malæ; and the rest of the bones contribute to form the bottom and sides. The bottom is perforated by the *foramen opticum*, an angular hole, to give passage to the optick and other nerves, bloodvessels, &c. The whole chamber is lined by a continuation of the *dura mater*, a membrane which protects the brain.

The two orbits, in their natural positions, might be compared to two funnels, placed horizontally, side by side, opening with their mouths outwards. In these fastnesses the eyeballs are most effectually preserved from external violence. Concussions are dispersed in the joinings of the bones, which, had the orbit been formed of a single piece, instead of seven, might have often suffered fracture from their influence. The situation of the orbits in contributing to the safety of the eyes is also most "express and admirable;" for, be it observed, they stand centrally between the projections of the nose, brow, and cheek bones, which, in cases of a fall or a blow, receive the entire shock.

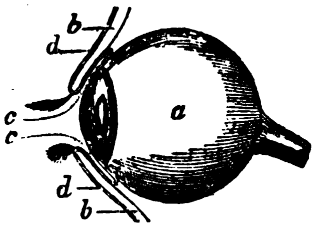
2. THE CURTAINS OF THE EYE.

It is necessary that the interiour of the socket of the eye should be guarded from the intrusion of dust or other extraneous matters. This is ingeniously effected by a curtain-like membrane, called the *tunica conjunctiva*.



Section of the eye, showing its situation in the orbit.

This membrane, which is also called the *adnata*, is an infected prolongation of the skin of the eyelids. Before, however, we proceed to describe it, the reader will please to examine closely the following diagram, by which he will acquire a clearer idea than words can convey of its form and situation, and, consequently, be better able to understand the remarks that follow. Let *a* represent the eyeball, and *b b* the upper and lower lids. Now it is plainly manifest



that some additional contrivance is wanting to prevent dust or other bodies working their way through passages at *c c*, between the ball and the lid, into the socket of the eye, where their presence would excite insufferable and incurable pains. To meet this exigency, we find that the common skin of the eyelids *d d*, after covering their respective edges, goes inwards a little way between the lid and the ball, and then turning backwards, is reflected over the surface of the cornea, where, to prevent the obstruction of vision that would otherwise follow, it becomes *perfectly transparent*. We think that no part of our marvellous bodies exhibits a more pleasing instance of the economy, wisdom, and tenderness of the Creator. The economy of this arrangement is evidenced in the circumstance of no new organ having been created for the purpose—it is an adaption of the skin of the eyelids. Its wisdom is shown in the simplicity of its design, in the unerring truth with which its functions are performed, and in the singular circumstance that the difficulty of the case had to be overcome by one of greater magnitude—that of passing the skin of the eyebrows across the very pupil. But God, whose "understanding is infinite," with a majesty which is heightened rather than diminished by the littleness of the objects, steers the course between pain, on the one hand, and blindness on the other, by making the membrane, where it covers the pupil, "*transparent*." And the tenderness of his care is shown in the fact, that without this little but difficult contrivance, we could not long have used our eyes; but with it we can live our threescore years and ten without annoyance, even from the smoke and dust of the city.

3. THE EYELIDS.

These are composed of the common integuments, with a cartilaginous margin to give them shape, and muscular fibres to give them motion. The cartilage which forms the margin of the lids is called the *tarsus*, and, like all the parts of the eye, is an exquisite piece of mechanism. It lies like a hoop on their edges, and, from its stiffness, keeps them of a circular figure, so that they close neatly over the eye, and meet with the most perfect accuracy.

The upper eyelid only is moved for the admission of light to the eye; it is raised, or in common language, "the eye is opened," by a muscle called the *levator palpebræ*. In "shutting the eye," the closure of the lids is effected by a muscle called *orbicularis palpebrarum*, which acts with great power on both eyelids.

Immediately within the edges of the eyelids, beneath the surface, a number of beautiful little glands are embedded, called the *meibomean glands*, and from these, about twenty or thirty ducts, or pipes, open upon the edge of each eyelid. In the glands a white greasy matter is secreted from the blood, and slowly poured by the ducts upon the edge of the lids, which they defend from being inflamed by the tears, and assist also in striking them together during sleep. It is this matter in a dried state which we pick from the inner corners of the eyes, on arising in the morning.

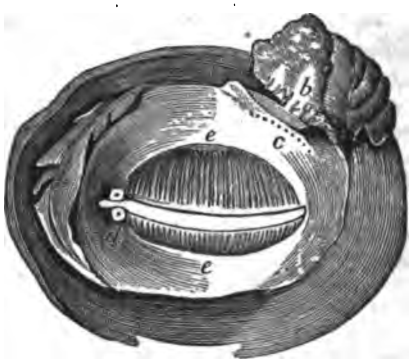
Upon the outer edge of the eyelids, fringes of hairs called the lashes, defend the eye from insects, and are of constant use in mitigating the "too fierce impression" of the sun's light.

4. THE SECRETION AND DISTRIBUTION OF TEARS.

Tears, which equally express our joys, sorrows, pity, and affections, flow more constantly than we are accustomed to consider. Like spoiled children we may literally be said to be "always crying;" for, whether asleep or awake, the brilliant tears pursue their crystal course in a perpetual stream over the eyeball, moistening its surface, and washing away its impurities. This, as a defensive provision, is that which we have now chiefly to consider.

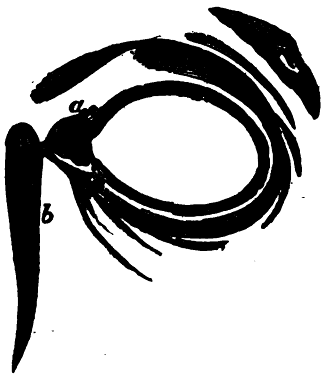
5. THE LACHRYMAL GLAND.

The lachrymal gland is a small spongy body, of a flattened form, seated in the hollow of the bone in the upper and outer part of the orbit, just beneath the outer end of the brow. Its office is to secrete the fluid of the tears from the blood, and to discharge it over the surface of the eyeball. This it performs by means of a number of little pipes or ducts, which proceed from it, and open upon the inner surface of the upper eyelid. We have already described, at Section 2. the contrivance by which particles of dust, &c. are kept from the inner chamber of the eye; but we have now to explain the use of tears in cleansing the surface of the eyeball, from similar impurities. When motes rest upon the eyeball, they are, by "winking," immediately wiped off into the channel of the lower lid, when the exquisite sensibility of the membrane by which it is lined, excites the lachrymal gland to a copious discharge of tear water; the eye is suffused, and the offending atoms floated to the inner angle of the lids, and discharged. But here the remedy threatens to become a disease, and an apparatus is wanted for draining off the superfluous water, which, if it were left, would dazzle the sight, inflame the lids, and cause the lashes to rot at their roots, and fall. This would at once have made man a miserable creature, and therefore God, who, as Paley remarks, has made no organ to irritate or give pain, but all for pleasure and convenience, has, in this instance, made a beautiful provision for the *defence* of the eye in the creation of—



The eyelids separated, and viewed from behind; *a*, the lachrymal gland; *b*, the ducts from ditto; *c*, the mouths of these ducts; *d*, the puncta lachrymalia: *e*, the meibomean glands, described in Section 3.

6. THE PUNCTA LACHRYMALIA, AND THE LACHRYMAL SACK AND DUCT.

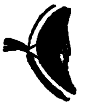


The eyelids viewed from before; *a*, the canalicula lachrymates, *b* the lachrymal sack.

The puncta lachrymalia are two small holes, placed at the inner angle of the eyelids, forming the mouths of a double canal (canalicula lachrymates) or duct for draining off the tears from the eye into the nose.

The lachrymal sack is a bag of an oval shape, fixed to the end of the double canal, and lies in a depression of the nose bones. It terminates in a tube, called the duct, which passes through a hole *made for it* in the nose-bones, and opens into the nostril. The manner in which this apparatus acts, is as follows:—Tear-water, on its discharge from the lachrymal gland, at the upper and outer part of the front of the eyeball, descends by gravity, and is continually spread in greater or less quantities over its face, washing away impurities, and preserving its brilliancy; it is then collected in the inner angle of the eye, and absorbed by capillary attraction into the puncta lachrymalia, the tube from which immediately discharge it into the lachrymal bag and duct, which, together, act like a syphon, and empty it into the nostril, where the constant passage of warm air causes its speedy evaporation.

We have only now to notice, in connexion with the tears, a contrivance of great beauty for ensuring their discharge during sleep, when the lids closely embrace the eyeball. In our description of the structure of the lids, we mentioned that their edges were kept of their proper circular form by a cartilaginous hoop, called the tarsus. Now it is found, on a closure of the lids, that the edges of the tarsus incline inwards, so that the lids touch each other only on the front edges, and leave behind them a triangular gutter thus:—in which the tears run as smoothly as water in a conduit-pipe, to the puncta lachramalia. Without this assistance, "nature's sweet restorer, balmy sleep," could only have been enjoyed with the daily penalty of sore eyes. Can anything speak more strongly of HIM who has said, "that his goodness is over all his creatures?"



7. THE EYEBROWS.

The last defence which we shall notice is the brow. Man, the child of disobedience, daily suffers under a judgment in which, however, much of mercy mingles. He is the victim of *fatigue*, and in the sweat of his brow he eats his bread. When labour exhausts and inflames the system, the forehead and temples usually perspire in great quantities, and on such occasions the eyes would have been in danger of irritation from the entrance of the "briny drops," had not the brows stood, as they do, immediately over them. The perspiration is caught in its descent, and held among the hairs of the brows, till it either evaporates, or is wiped away. Persons used to a town residence, or a temperate climate, can hardly conceive how useful the brows are in this respect, to the husbandman and the *slave*.

ANTIPATHY OF THE RATTLESNAKE TO WHITE-ASH.

A writer in Silliman's Scientifick Journal gives an account of an interesting experiment made upon the body of a large rattlesnake, a few years since, in the northern part of the state of Ohio. The experiment which we are about to relate was made about thirty years ago by Judge Woodruff, in order to test the accuracy of a prevailing notion among the people, that the leaves of the white-ash were highly offensive to the rattlesnake, and that this horrible reptile was never found on land where the white-ash grows. It is the uniform practice among the hunters who traverse forests in the summer, to stuff their boots and shoes and pockets with white-ash leaves, for the purpose of securing themselves against the bite of the rattlesnake; and it is said that no person was ever bitten who had resorted to this precaution.

The accounts given by Judge Woodruff mention that he was one of a small party who went to the Mahoning river for the purpose of hunting deer. The party took their station on an elevated spot fifteen or twenty yards from the water's edge. Here the men watched for their wished-for game about an hour; but instead of a harmless and beautiful deer, they saw a large rattlesnake which had crawled out from among the rocks beneath them, and was slowly making his way across a narrow smooth sand beach towards the river. Upon hearing the voices of the men, the snake halted and lay stretched out with his head near the water. It was now determined to try the white-ash leaves. Accordingly search was made, and a small white-ash sappling, eight or ten feet long, was procured, and with a view to make the experiment more satisfactory, another sappling of sugar-maple was cut. In order to prevent the snake's retreat to his den, the judge approached him in the rear, and when he had advanced within almost eight feet of him, the snake coiled up his body, elevated his head several inches, brandishing his tongue, and thus signified his readiness for battle.

The judge then presented his white-ash wand, placing the leaves upon the body of the snake. The snake instantly dropped his head upon the ground, unfolded his coil, rolled over on his back, twitched and twisted his whole body in every form but that of a coil, and gave signs of being in great agony. The white-ash was then laid by, upon which the snake immediately placed himself in a coil, and assumed the attitude of defence as before. The sugar maple stick was next used. The snake darted forward in a twinkling, thrust his head into the leaves "with all the malice of the under fiends," and the next moment coiled and lanced again, darting his whole length with the swiftness of an arrow. "After repeating this several times," says the judge, "I changed his fare, and presented him with the white-ash. He immediately doused his peak, stretched himself on his back, and writhed his body in the same manner as on the first application. It was then proposed to try what effect might be produced upon his temper and courage by a little flogging with the white-ash. This was administered; but instead of rousing him to resentment, proved only to increase his troubles. As the flogging grew more severe, the snake frequently stuck his head into the sand as far as he could thrust it, seemed desirous to bore his way into the earth, and rid himself of his unwelcome visiters. Being now convinced that the experiment was a satisfactory one, and fairly conducted on both sides, we deemed it ungenerous to take his life after he had contributed so much to gratify our curiosity, and so took our leave of the rattlesnake, with feelings at least as friendly as those with which was commenced our acquaintance with him, and left him to return at leisure to his den."

Evils in the journey of life, are like the hills which alarm travellers upon their road; they both appear great at a distance, but when we approach them we find that they are far less insurmountable than we had conceived.

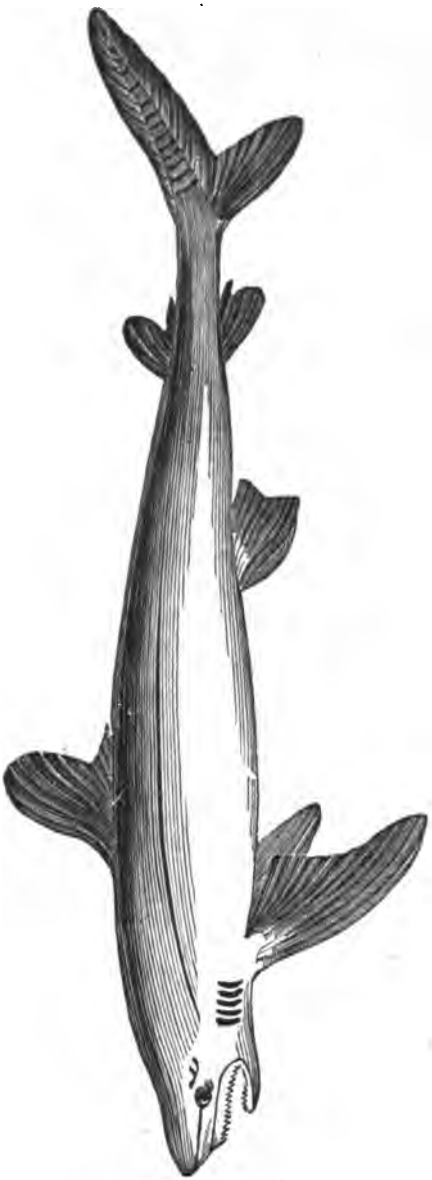
NATURAL HISTORY.

THE CHAMELEON.

The chameleon is an animal of the lizard species, about which so many stories have been told, and so much curiosity excited, that no apology need to be offered for the description here given. It is a native of various countries, particularly in the warm climates; and many of them are found about Smyrna, and other parts of Turkey. Its head is larger than the common lizard; and its back is shaped very similar to that of a pig. It has four feet, which are divided into claws resembling those of a parrot; and it has a long flattish tail, of which it makes great use in climbing, for thereby it will hang to the branches of a tree, as well as by its feet, and draw up its body to a resting place. Its tongue is three or four inches long, of a whitish grisly substance, round as far as the tip, which is hollow, and shaped like the end of a pestle, somewhat like the proboscis of an elephant. The tongue is contained in a sort of sheath, joined to the throat, from which the animal can dart it with extraordinary quickness upon flies that come in its way, or other small insects, on which it undoubtedly feeds, and not on the air, as some fictitious romances have stated. In order to retain those flies, the tongue of the chameleon is supplied from its throat with a viscous or glutinous matter, which exudes from the tip, and secures the victim, which it then draws into its mouth. However, these animals can live a long time without taking any visible sustenance, and from this circumstance has probably risen the errour of supposing that they live on the air alone: the fact is, that the lungs of the chameleon, reaching almost the whole length of its body, are so formed that it can draw in so much air as from a thin and lank appearance to seem full and gross. Its lungs are divided into two lobes, placed on each side of its body: they are of a thin membraneous substance, full of small veins, and therefore capable of expansion by a quantity of air; but being let out, they shrink, become flaccid, and the animal again appears lean and cadaverous. The head is immoveable, except as it turns with the body; but to recompense for that defect, it possesses fine eyes, about the size of a pea, which it can move in a peculiar manner, with different motions, the one backwards, the other forwards one upwards, the other downwards; or fix one of them on any object, while the other moves in pursuit of some other: so that its eyes are quite independent of each other, and capable of all the evolutions that can be imagined. The eye is formed with concentrick circles, one within another, the innermost having an aperture about as large as the head of a pin, through which the light enters, and effects the power of vision. The animal does not appear to have any ears, but it has two small openings in the head, which serve for nostrils.

The most astonishing quality of the chameleon is the faculty of changing its colour, and assuming those of the objects near which it is placed. The usual colour of those observed about Smyrna is green, darker on the back, and lighter beneath, inclining to yellow, with spots sometimes reddish, sometimes whitish. There are many of them to be seen among stones, and on the earth, of a grayish colour, like the stones and moss among which they breed; but on being handled, or removed to other places, they have not always appeared to take the colour of that upon which they have been placed; and naturalists differ in their opinions, as to the reason or manner of the chameleon's changing its colours. Some maintain it is done by suffusion, others by reflection; and some think it is by the different disposition of the skin, which gives a modification to the rays of light.

An ingenious traveller, who tried several experiments on this animal, after relating their effects, says: "This we constantly experienced, that being placed upon green, the animal became of the same colour; and being removed and put upon dark earth, it would assume that colour also. And what is equally surprising, in one hour it seemed to be a skin, and the next hour it would appear fat, plump, and fleshy." Nature, we see, has given to all animals the powers and organs necessary to procure subsistence; and this change of colour may tend to deceive such insects as constitute its food, and which would not settle near enough to be caught, if they were not deluded by mistaking it, for a part of the substance on which they were accustomed to alight; for it seems to have no means of catching them until they come within reach of its tongue.



WHITE SHARK.
(Carcharias Vulgaris.)

All sharks are a solitary, rapacious, bloodthirsty species of animal, carrying slaughter and certain destruction wherever they go. They are, as respects their own element, precisely what the Bengal tiger is in India—the most insidious and cruel, of all the inhabitants of the great deep. Of all others, the white shark is the most terrifick, and therefore regarded by mariners with peculiar dread.

White sharks cannot be said to be very common on this coast; vessels, in approaching the land, occasionally discover one of these huge devourers, gently gliding through the water, in the wake of the rudder.

Usually the colour is a light-ash, hence its name, though it is by no means always of that shade. On the back, as with nearly all fishes, the skin is quite dark; the tail has three lobes; teeth exceedingly numerous—and the body, when fully grown, from twenty to thirty feet long. In tropical climates, however, it attains it greatest size. Fossile teeth of a shark, to which family, the one under consideration belongs, are found at Malta, measuring four and a half inches from the point to the base, and six inches from the point to the angle. All the fossile bones of the antediluvian races, which have been discovered, show that the primitive animals were of far greater magnitude than those of the present time. Perhaps there is no subject of deeper interest to the naturalist, than this curious fact, sustained by the exhibition of entire skeletons, in the cabinets of this country and Europe. These prove conclusively, that those which preceded the present occupants of the soil, were truly gigantick. The perfect bones of a lizard, sixty feet in length;—the teeth, sculls, and vertebræ of the mastodon, as well as some others, will ever remain objects of wonder and astonishment. Were those moving mountains of flesh, proportioned to the products of the earth? and if so, and they were permitted to roam over the globe, what physical change in the constitution of the world, rendered it necessary to drive entire species utterly from existence, by a sudden and terrible desolation? After the deluge, the animals which were distributed over the continent of Asia, seem to have been diminished in form, and though, in process of time, exceedingly numerous, the aggregate, apparently, is better proportioned to the amount of sustenance, yielded by the soil.

How these observations will apply to the water, we are not prepared to say. The whale is probably as large as the primitive whales, but those animals which were certainly on the dry land once, corresponding in bulk and power to those in the ocean, no longer have a being.

But to return;—the white shark, in his wide, dilatable jaws, has six rows of sharp, triangular teeth, which can be raised or depressed by appropriate muscles at pleasure. Its velocity is such, that nothing seems to be able to escape, and its greediness is never to be satisfied. By one gripe of the jaws, they can cut a man in two. A redhot cannon-ball is sometimes lowered over the side to one of these disagreeable followers of a ship, which the seaman has the satisfaction of seeing the shark receive, into his yawning throat.

At the pearl-fisheries of South America, where white sharks are numerous, visiting the mighty caverns in the rocks, the water being so clear, that a small object may be seen at a considerable distance, the divers, familiar with the character of the men ers, in their descents for the oyster, are obliged to go armed, in self defence. For this purpose, some carry a long sharp knife. As the shark's mouth is placed somewhat under the head, he endeavours to get over his intended victim, and if he discovers no disposition in the Indian to move, gently settles down over him with his horrible mouth widely extended. With the coolness of a philosopher, the instant he is near enough to be reached, the diver plunges the knife into his vitals. A very ingenious mode, which is practised, says a writer, from whom these observations have been principally extracted, is for the diver to carry down with him four or five hard-wood sticks, about two feet long, sharpened at both ends. In case he is likely to be disturbed in his search for the oyster, by the visit of this king of sharks, he thrusts one of the sticks between his jaws, as he is in the act of closing them. This props them asunder, and the force with which they are brought to act on the stick, securely pins both ends into the bones—and away he goes without the possibility of a remedy. Instances have been known of an Indian, who was so sharply set upon, that he gave away three sticks in succession, before quitting his dangerous post.

At the Marquesas islands, where this shark abounds, the natives swim in the midst of them quite fearlessly; and the only reason why more of them are not devoured, must be the peculiar ease with which they are supplied with large fish. Whenever, however, a native is so unhappy as to be caught by one of them, his associates never exert themselves in the least, to extricate him, because it is a common matter of belief there, that sharks never seize any but the wicked—or transgressors of law, and therefore the man deserves to die.

A gentleman of our acquaintance informed us that he saw a young girl swimming from a Boston vessel, waiting to receive a cargo of sandal wood, with a heavy bar of iron on her shoulder, which she had contrived to steal from the deck. She swam under water a considerable distance, before coming up for breath, but the moment she was seen the boats put off, with the expectation of recovering the bar.

Just as the boats were so near that she was fearful of being struck with an oar, which was raised by a man in the bow, she plunged a second time—the boats pursued the track, but as she came up to the surface, still holding the iron, a "*mighty white shark* swallowed her at one effort;—the velocity towards his object being so great, that as he rolled upward, the girl was driven down his throat."

He also saw a shark seize a man by the leg, just below the knee, who at the instant, being just ashore, grasped a projecting stone on the beach. The shark drew with all its might, but the man held on, screaming most piteously for aid, but, although many of his comrades were near, no one came to his assistance. His leg was dreadfully lacerated, and the bone crushed:—in that condition he was exhausted by the loss of blood, and the shark gained its object.

West India negroes sometimes show a fearless dexterity in diving in among these sharks, with keen knives, purposely for the pleasure of butchering them. On the coast of California, the Indians occasionally sustain extraordinary combats with the same species, for the amusement of European spectators.

Notwithstanding the ferocity, and apparently insatiable appetite of the white shark, it is said they will not touch a fowl having the feathers on.

In the history of Barbadoes, and in the relations of voyagers to the South sea islands, all that is shocking in the history of this creature may be found.

In the records of Aix, a seaport of France, in the Mediterranean sea, is the account of a shark, taken by the fishermen, twenty-two feet long, in whose stomach, among other undigested remains, was the headless body of a man, encased in complete armour.

A friend has sent us the following note—for the truth of which he is ready to pledge his reputation:—

"Some years ago, a young gentleman going passenger to the island of Jamaica, when near the port of destination, was drowned. A short time after, the uncle of the gentleman was on board a vessel in that region, the crew of which caught a large shark. On opening him, a common practice of sailors, in the stomach they found, among other things, a gold watch, chain and seals, which being examined, were at once recognised by the uncle as the very same he had given his nephew, at the time of sailing."

The æsophagus of this despot of the sea, is so capacious, that a full-sized man can readily be taken down whole. We possess, in a collection, the dried jaws, which opened, like the clasp of a purse, will admit the shoulders of an adult person. This fact, of the width and extensibility of the throat, has given rise to an opinion that this was the fish that swallowed Jonah.

But we neither believe, nor infer from the declaration in the Sacred narrative, any such ridiculous supposition. The words are these, viz.:—"Now the Lord prepared a great fish to swallow up Jonah." Such is the anatomical structure of the teeth, in all the larger varieties of shark, with which naturalists are conversant, that nothing can be very conveniently extracted from the stomach, through the æsophagus, which has once been admitted there.

Like the entrance of a mousetrap, there is a free admission, but no possible retreat. This mechanism is particularly necessary in the economy of the shark—obliged by the law of its nature to subsist on living animals, which, were it not for the singular provision of pointing all the teeth backward, and the prickly spines in the gullet, directed the same way, would escape almost as soon as swallowed.

The same mechanical arrangement is noticeable in the throats of all the serpents: the teeth are not for mastication, but solely for holding and preventing the escape of the prey. We therefore place implicit confidence in the biblical account, that God created a fish, expressly to accomplish the miracle of swallowing, and subsequently ejecting the undutiful prophet upon the dry land.

Pliny's close observation may be inferred, from a statement he makes, that the shark turns on its back to bite unless it settles over the object—an observation corroborated by succeeding writers.

The tail being a powerful organ of destruction, as soon as the animal is drawn on the deck of a vessel, the seamen usually cut it off immediately, with an axe.

When the skin is nicely manufactured, a kind of leather is made, called *shagreen*, used in covering mathematical and surgical instrument cases.

Smith's Hist. of Fishes of Mass.

RAMBLINGS IN WINTER.—No. II.

Having in my preliminary number, hinted my partialities to the reader in relation to the method of travelling, I shall now proceed in my ramblings.—Lest he should anticipate too much, however, it may be well to remark at the outset, that my travels have been confined to a limited section of country, and indeed have been very desultory and immethodical. It is for that reason that I have adopted the term *rambling*, which signifies straying, jaunting, gadding, and sometimes rummaging. I do not intend he shall infer, however, that *travels* are any the less interesting or adventuresome for being *ramblings*.

The reader must suppose the rambler dropped down at Buffalo. I cast my eye about the magical place for a few moments, and stepped into one of the hotels. After deliberately hanging my overcoat against the wall, I partook of a cup of coffee and a French roll, for which the landlord modestly took from me fifty cents. A negro was polite enough to assist on my overcoat, and charged for that act of supererogation, precisely twelve cents and a half. As I passed out, I was pursued by about a dozen negroes and boys, who completely surrounded me, crying out incessantly: "Carry your valise, sir?" "Carry your valise, sir?" Fortunately escaping from the precincts of the public hotel, I rambled up Main street in search of a stage office. Precisely two hours after I was dropped down at Buffalo four horses were dragging a dark stage containing an elderly gentleman with a buxom daughter, and myself, through mud, six inches deep, in the direction of Cattaraugus woods. I was not favourably impressed in relation to the comforts appertaining to Buffalo, although I was astonished at the magnitude of its business, the stir and hum of its industry, and the universal enterprise and energy of the place.—The town, however, like a burly young lady, has evidently grown too fast for its drawing-strings. It is unfinished, unsettled, confused—so is the society. The passion for money is too strong—it is the root of the manifold evils of the place.

The road from Buffalo to Fredonia, with the exception of that through the Black swamp, in the northwestern part of Ohio, is perhaps the most horrible stage road in the United States. It leads along the border of lake Erie, through swamps, woods, and lowgrounds. In the course of the evening we passed through an Indian settlement, near or upon Cattaraugus creek. We discovered the settlement by the glimmering and scattered lights of the cabins amongst the forest trees. About midnight I was set down at Kensington, a village consisting of a tavern-house, and cider-mill, and about forty miles from Buffalo. We were fifteen hours on the road, and endured, many upsets, tumours and turnovers, and were frequently under the necessity of prying the stage out of the mud with rails. Had it not been for the singing propensities of our fair Ohian passenger, we should have had nothing to soften the asperities of our way, or alleviate the distresses of such a journey. She had been recently converted to the Methodist faith, and her father was an elder in that church. Hence, it may be inferred, she was not wanting in zeal and strength of voice, and accompanied by her father with his deep base, the effect in that dark and uneasy stage, and on that terrible road, was, indeed, not bad. Methinks I even now, hear those stage curtains rent and rending to tatters, by the swelling of those powerful voices!

From Kensington to Forestville, three miles, I procured a ride in a one-horse wagon. The mud on this piece of road was not so deep—it did not exceed generally four inches. Forestville is surrounded by hills and woods—it is quite snug in winter, and in dry weather I should think not unpleasant. It has several hundred hardfisted inhabitants, but the soil is not exuberant. From this place it was my purpose to proceed towards the Conewango. But on account of the difficult roads, and the scarcity of horses, I was unable to procure a conveyance of any kind, on any practicable condition. *Accordingly*, I took my valise in hand and set out on foot. The afternoon of that day was long, warm and tedious. Near nightfall I discovered a signpost bearing the following welcome tidings: "The Traveller's Home." I stopped in; and here I was presently informed I had accomplished four miles on foot! Under this discouragement, I was induced, by an urbane invitation, to remain over night. I know not why I did not accomplish more, unless it be that I rested too frequently and too long by the wayside. However, if my fatigue was not a sufficient incentive to stop at this place, I was entirely persuaded, when the landlady affectionately "tell'd" me that they were to have a "paring bee" that night. She "guessed there would be a mess of young men and gals there, and," continued she, enthusiastically, "they'll come ten mile for't I know, and Dan —— is going to fetch his violin!"

The house was built of hewn timbers, and was one story high. In the centre was a huge stone chimney, and a partition of boards on each side, forming a connected partition through the centre of the house, created two very good-sized apartments. One of these was for the "women-folks" and the other was the bar-room. At one side of the bar-room a board partition had been run across, and two small bed-rooms had been therein formed, for the accommodation of travellers. A long bench of slab-timber stood before the mighty fireplace, and sundry three-legged stools, an oldfashioned cherry table, and a white-pine counter for a bar, constituted the sole furniture of the bar-room. Behind that counter stood a barrel of Monongahela—on it a pitcher and a glass.

The landlady, who was a strong and wholesome woman, commenced early and made amazing stir to put things to rights. She instructed her boys to put on a backlog and pile up a heap of wood by the side of the fireplace—her girls to have some cider drawn, butternuts brought down, and a plenty of doughnuts and cheese set by in the pantry—while she arranged two stout barrels of apples in the middle of the floor, and fixed the seats about precisely as she intended they should all sit. The party began to come in at about dusk, and at seven o'clock, near twenty couple of young men and girls had gathered in from the neighbourhood. It is impossible to describe the scene preparatory to the "paring" operations—no one can imagine the character of the noise produced by the chattering of so many voices, unless he has been in the neighbourhood of an awakened pigeon roost—I mean the pigeon roosts of the wilderness. However, order was magically restored in a short time, and it being settled who should be the "parers," who the "sorters," who the "quarterers," and who the "corers," they all fell to, and a large tub was shortly filled with apples, nicely "cored and quartered." During this operation however, there were sundry snappings of seeds and twistings and twirlings of apple-skins, which furnished no less amusement to myself than glorious sport to the company. It is to be supposed that I received my full share of apple-seeds and apple-skins; the company having become wonderfully familiar with me for so short an acquaintance. When the first tub was filled, there was a respite: and the thunderings, murmurings, screamings, screachings, commenced again—the cider circulated; and as soon as Dan the violinist began to "tear out" a tune, there was such a jumping, shuffling, kicking, spilling of apples, flying of skins, and "grand and lofty tumbling," as I never before witnessed. It "got out," presently, that amongst my other numerous accomplishments, I could play on a fife! Upon this, Dan transferred his violin to me; and while he ran more than two miles, swifter than Crusoe ever chased a goat, after a fife, I inspired the dance with musick on the former instrument. When Dan the violinist arrived, I applied the shrill pipe by way of accompaniment. The effect was wonderful. The whole company stood still, and gazed for a moment; then the *soiree* commenced again as though it had received a supernatural kick—and indeed the hipsey-saw, the *chasse*, the crossover, the down outside, the double shuffle, the single shuffle, the waltz, gallopade or "hip 't' hop," and the reel and hornpipe, were mingled there with most surprising spirit, congruity and taste.

Again, however, after circulating the cider and the Monongohela, all returned to the task of apple-paring. But Dan and myself, by universal acclamation, were appointed to entertain the company with some of our finest "touches." Dan's arm, however, soon became fatigued, and as for myself, my breath could not have held out much longer, for my instrument was an ancient one, and required a deal of wind and much watering. Whereupon Dan proposed that the eldest of the company should relate a story. It fell upon a small, sharp-nosed, rough-hewn, long-haired man, of about sixty, who, it appeared, had just happened in. Drawing his chair into the corner, and thrusting his stick into the ashes, he thus began:—

"There was once a rich miser, who, laying at the point of death, made his will; therein he provided, that as he had always been fond of hickory nuts, the space unoccupied in his coffin after his death should be filled with them. His executor did as directed, and the old miser and his hickory nuts were sent to the tomb.

"Now, at the old man's funeral, a youngster who had a great liking for hickory nuts, and couldn't, for the world, see that so many in the coffin could be of any possible benefit to the dead miser, resolved to get them. So he started of a dark evening to procure the nuts. Coming to the gate of the burying-ground, he met a stranger, who asked him where he was going: He replied: 'None of your business;' 'where are *you* going?'—'None of your business.' Thus at issue upon such equivocal answers, they suspected each other of being engaged in like pursuits. Whereupon, the former frankly told the latter, that he was going to get the hickory nuts in the old miser's coffin. 'Well,' said the other, 'I am going to steal a sheep, and now, if you are a mind, we'll engage to go snacks.'—'Agreed,' replied the former, 'and we'll meet on the steps of the church.' They went, each his own way. The youngster succeeded in getting into the tomb, and opened the old miser's coffin. He took out nigh upon a bushel of hickory nuts, and tied them up in the old man's shroud. On reaching the church door, he found that he was in advance of his comrade, and pouring down his *spoil*, he put on the shroud, and commenced cracking his hickory nuts. Presently, as the clock was about to strike nine, the sexton's boy came to ring the bell. He knew of the circumstances of the old miser's burial, and on seeing a being in white, sitting on the church stones cracking nuts, he fancied the old miser had '*ris*.' He was seized with such a fit of affright, that he dropped his lantern and ran home as swift as his legs would carry him. 'O father! father!' cried the boy, in consternation, 'the old miser's riz, and there he sits on the meetin'us steps, cracking his hickory nuts!' 'Go up, fool, and ring the bell.' ''Tis true as I'm alive—there he is, all in white!' 'Go up and ring the bell I tell you—don't be round here with your nonsense.' The boy started again, and again he saw the apparition, and ran home to his father's bedside, full of consternation. His father had been for a long time a cripple, and bedridden. ''Tis *sartin* as the world, father,' again exclaimed the frighted boy, 'and if you won't believe me, if you will get on to my back, I will carry you there, and show you to your satisfaction.' The old man's curiosity was a little excited, and, to gratify the boy, he consented. The boy accordingly started with the old man on his back, and a lantern in his hand. On approaching the church, the being in white became apparent. Presently, the boy stopped with his burden in utter amazement. They heard the apparition asking, in deep sepulchral tones: 'IS HE FAT? IS HE FAT?' Almost chilled with terrour, the boy dropped his father, exclaiming: 'Try him yourself, for aught I care!' and sped for home, and his crippled father was not slow at his heels!"

The old man's story, although I cannot convey the manner and effect, produced wonderful applause. It being now about nine o'clock, and the task about finished, we all partook of a plain and quiet feast of doughnuts and cheese, butternuts and apples. Then came the cider and the old Monongahela—then Dan and I lay hold of our instruments—then the floor was cleared and again the dance began. It will be sufficient to observe, that the spirit of the jig, the fandango, and the rigadoon, were never more inspiring, never more irresistible. Indeed, even so grave and modest personages as Dan and myself were irresistibly drawn into the giddy mazes, and our feet and our fingers, our bodies and our souls, were entirely engrossed in the remaining business of that evening. The "paring bee" broke up at three o'clock.

The following morning, I was aroused by the following exclamation: the speaker was a Scotchman, employed about the premises as a "hired man:"—

"God's sake, sir, the deil's to pay wi' us a'! The cows tails are a' tethered thegither i' the barnyard!"

"What?" cried the *snoosy* landlord, a short, "fat, round, oily man."

"Gang ye out wi' me, and ye wad see sic sair witchcraft hae been ganging the nicht. The pigs i' the garden—the oxen i' the corn, an the deil take me, gin the horses heads ar'n't a' whar' their tails should be i' the stalls!"

I overheard some unconscionable oaths that slipped through the teeth of the old fellow, relative to "paring bees," and barely had time to get up, before I espied him riding at a furious rate with an ox goad in hand, in the direction of the cornfield. Although it was late in the season, he still had some "lopped" corn standing out. He routed the cattle army in that quarter, even before the Scotchman could get into the field. He then put in spur for the barnyard, and dashed on with such vigorous speed, that the Scotchman afterwards declared, "the deil o' bit could he keep sight o' him!"

Five cows were drawn together in the centre of the barnyard; and a line passing through each of their noses, would have formed the periphery of a circle, of which their bodies were radii, and the extremity of their tails gathered into a knot, the centre. The landlord in the plenitude of his zeal, was about charging upon the captives, with the fury of a second Hector before the walls of the Ajaxes. But his charger bolted, unequal to the desperate onset; and the old man thereby was thrown high upon his horse's neck. The steed, not relishing the manner of taking his seat there, so suddenly reared, that the man was thrown back upon the crupper. Fancying this a species of impertinence, the indignant horse kicked up so high and lustily, that the hero was shot off in a tangent, and made a lodgement upon the horns of one of the captive cows. She, not savouring the ponderous burden any more than Esop's bullock did the gnat, gave him a toss to that other extremity by which she was joined in fellowship to her four companions. There he came to the earth with severe contusions; and the cows, continually backing in and stepping about, trod upon his members, and exceedingly aggravated the melancholy nature of his condition. But the undaunted hero, with "passion still strong," raised himself upon one elbow—then drawing from his pocket a barlow knife, a "many-year'd" companion, he slyly reached up his arm, and severed the Gordian knot! The glad quadrupeds, like wild birds freed from bondage, scampered off in every direction, much to the disparagement of the barnyard fences.

The landlord recovered; and fancying the spirit of his horse, I purchased the animal. It was then that I obtained that high, dryshod, and independent situation, for which I have so strongly expressed my partiality. I left the "Traveller's Home," the same day, and shall long treasure its pleasing associations. In the course of the afternoon, I reached the Conewango, at Randolph. The country through which I passed was quite hilly and woody. Soil, rather damp and cold. Timber, pine, hemlock, maple, and beech. No stage roads running north and south through this section. My way was muddy, wild, and sometimes, without even the semblance of a path.

DANIEL MORGAN.

From the "Custis Recollections and Private Memoirs of the Life and Character of Washington."

The outposts of the two armies were very near to each other, when the American commander, desirous of obtaining particular information respecting the positions of his adversary, summoned the famed leader of the riflemen, Colonel Daniel Morgan, to headquarters.

It was night, and the chief was alone. After his usual polite, yet reserved and dignified salutation, Washington remarked, "I have sent for you, Colonel Morgan, to intrust to your courage and sagacity, a reconnoitre of the enemy's lines, with a view to your ascertaining correctly the position of their newly-constructed redoubts, also of the encampments of the British troops that have lately arrived, and those of their Hessian auxiliaries. Select, sir, an officer, a non-commissioned officer, and about twenty picked men, and, under cover of the night, proceed, but with all possible caution, get as near as you can, and learn all you can, and by day dawn retire and make your report to headquarters. But mark me, Colonel Morgan, mark me well, on no account whatever are you to bring on any skirmishing with the enemy; if discovered, make a speedy retreat; let nothing induce you to fire a single shot; I repeat, sir, that no force of circumstances will excuse the discharge of a single rifle on your part, and for the extreme preciseness of these orders, permit me to say that I have my reasons." Filling two glasses of wine, the general continued—"And now, Colonel Morgan, we will drink a good night, and success to your enterprise." Morgan quaffed the wine, smacked his lips, and assuring his excellency that his orders should be punctually obeyed, left the tent of the commander-in-chief.

Charmed at being chosen as the executive officer of a daring enterprise, the leader of the woodsmen repaired to his quarters and calling for Gabriel Long, his favourite captain, ordered him to detach a sergeant and twenty prime fellows, who being mustered, and ordered to lay on their arms, ready at a moment's warning, Morgan and Long stretched their manly forms before the watchfire, to await the going down of the moon, the signal for departure.

A little after midnight, and while the rays of the setting moon still faintly glimmered in the western horizon, "Up, Sergeant," cried Long; "stir up your men," and twenty athletick figures were upon their feet in a moment. Indian file, march, and away all sprung, with the quick, yet light and stealthy step of the woodsmen. They reached the enemy's lines, crawled up so close to the pickets of the Hessians as to inhale the odour of their pipes, discovered, by the newly turned-up earth, the positions of the redoubts, and by the numerous tents that dotted the field for "many a rood around," and shone dimly amid the night haze, the encampments of the British and German reinforcements, and, in short, performed their perilous duty without the slighest discovery; and pleased, prepared to retire, just as chanticleer, from a neighbouring farmhouse, was "bidding salutation to the morn."

The adventurous party reached a small eminence, at some distance from the British camp, and commanding an extensive prospect over the adjoining country. Here Morgan halted to give his men a little rest, before taking up his line of march for the American outposts. Scarcely had they thrown themselves on the grass, when they perceived, issuing from the enemy's advanced pickets, a body of horse, commanded by an officer, and proceeding along the road that led directly by the spot where the riflemen had halted. No spot could be better chosen for an ambuscade, for there were rocks and ravines, and also scrubby oaks, that grew thickly on the eminence by which the road, we have just mentioned, passed, at not exceeding a hundred yards.

"Down, boys, down," cried Morgan, as the horse approached, nor did the clansmen of the Black Rhoderick, disappear more promptly amid their native heather, than did Morgan's woodsmen in the present instance, each to his tree or rock. "Lie close there, my lads, till we see what these fellows are about."

Meantime, the horsemen had gained the height, and the officer, dropping the rein on his charger's neck, with a spyglass, reconnoitred the American lines. The troopers closed up their files, and were either cherishing the noble animals they rode, adjusting their equipments, or gazing upon the surrounding scenery, now fast brightening in the beams of a rising sun.

Morgan looked at Long, and Long upon his superiour, while the riflemen, with panting chests and sparkling eyes, were only awaiting the signal from their officers "to let the ruin fly."

At length, the martial ardour of Morgan overcame his prudence and sense of military subordination. Forgetful of consequences, reckless of every thing but his enemy, now within his grasp, he waved his hand, and loud and sharp rang the report of the rifles amid the surrounding echoes. A pointblank distance, the certain and deadly aim of the Hunting Shirts of the revolutionary army, is too well known to history, to need remark at this time of day. In the instance we have to record, the effects of the fire of the riflemen were tremendous. Of the horsemen, some had fallen to rise no more, while their liberated chargers rushed wildly over the adjoining plains, others wounded, but entangled with their stirrups, were dragged by the furious animals expiringly along, while the very few who were unscathed, spurred hard to regain the shelter of the British lines.

While the smoke yet canopied the scene of slaughter, and the picturesque forms of the woodsmen appeared among the foliage, as they were reloading their pieces, the colossal figure of Morgan stood apart. He seemed the very genius of war, as gloomily he contemplated the havock his order had made. He spoke not, he moved not, but looked as one absorbed in an intensity of thought. The martial shout, with which he was wont to cheer his comrades in the hour of combat, was hushed, the shell* from which he had blown full many a note of battle and of triumph on the fields of Saratoga, hung idly by his side; no order was given to spoil the slain, the arms and equipments for which there was always a bounty from Congress, the shirts for which there was so much need in that, the sorest period of our country's privation, all, all were abandoned, as with an abstracted air, and a voice struggling for utterance, Morgan suddenly turning to his captain, exclaimed: "Long, to the camp, march." The favourite captain obeyed, the riflemen with trailed arms fell into file, and Long and his party soon disappeared, but not before the hardy fellows had exchanged opinions on the strange termination of the late affair. And they agreed nem con, that their colonel was tricked, (conjured,) or assuredly, after such a fire as they had just given the enemy, such an emptying of saddles, and such a squandering of the troopers, he would not have ordered his poor rifle boys from the field, without so much as a few shirts or pair of stockings being divided among them. "Yes," said a tall, lean, and swarthy looking fellow, an Indian hunter from the frontier, as he carefully placed his moccasined feet in the foot prints of his file leader, "Yes, my lads, it stands to reason, our colonel is tricked."

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* Morgan's riflemen were generally in the advance, skirmishing with the light troops of the enemy, or annoying his flanks; the regiment was thus much divided into detachments, and dispersed over a very wide field of action. Morgan was in the habit of using a conch-shell frequently during the heat of the battle, with which he would blow a loud and warlike blast. This, he said, was to inform his boys that he was still alive, and that from many parts of the field was beholding their prowess; and like the celebrated sea-warriour of another hemisphere's last signal, was expecting that "every man would do his duty."

Morgan followed slowly on the trail of his men. The full force of his military guilt had rushed upon his mind, even before the reports of his rifles had ceased to echo in the neighbouring forests. He became more and more convinced of the enormity of his offence, as with dull and measured strides, he pursued his solitary way, and thus he soliloquized:

"Well, Daniel Morgan, you have done for yourself. Broke, sir, broke to a certainty. You may go home, sir, to the plough; your sword will be of no further use to you. Broke, sir, nothing can save you; and there is an end of Colonel Morgan. Fool, fool—by a single act of madness, thus to destroy the earnings of so many toils, and many a hard-fought battle. You are broke, sir, and there is an end of Colonel Morgan.

To disturb this revery, there suddenly appeared, at full speed, the aiddecamp, the Mercury of the field, who, reining up, accosted the colonel with, "I am ordered, Colonel Morgan, to ascertain, whether the firing just now heard, proceeded from your detachment."—"It did, sir," replied Morgan, sourly. "Then, Colonel," continued the aid, "I am further ordered to require your immediate attendance upon his excellency, who is approaching." Morgan bowed, and the aid, wheeling his charger, galloped back to rejoin his chief.

The gleams of the morning sun upon the sabres of the horse guard, announced the arrival of the dreaded commander—that being, who inspired with a degree of awe, every one who approached him. With a stern, yet dignified composure, Washington addressed the military culprit: "Can it be possible, Colonel Morgan, that my aiddecamp has informed me aright? Can it be possible, after the orders you received last evening, that the firing we have heard, proceeded from your detachment? Surely, sir, my orders were so explicit as not to be easily misunderstood." Morgan was brave, but it has been often, and justly too, observed, that that man never was born of a woman, who could approach the great Washington, and not feel a degree of awe and veneration for his presence. Morgan quailed for a moment, before the stern, yet just displeasure of his chief, till arousing all his energies to the effort, he uncovered and replied: "Your excellency's orders were perfectly well understood; and agreeably to the same, I proceeded with a select party to reconnoitre the enemy's lines by night. We succeeded, even beyond our expectations, and I was returning to headquarters to make my report, when, having halted a few minutes to rest the men, we discovered a party of horse coming out from the enemy's lines. They came up immediately to the spot where we lay concealed in the brushwood. There they halted, and gathered up together like a flock of partridges, affording me so tempting an opportunity of annoying my enemy, that, may it please your excellency, flesh and blood could not refrain."

On this rough, yet frank, bold, and manly explanation, a smile was observed to pass over the countenances of several of the general's suite. The chief remained unmoved; when, waving his hand, he continued: "Colonel Morgan, you will retire to your quarters, there to await further orders." Morgan bowed, and the military cortege rode on to the inspection of the outposts.

Arrived at his quarters, Morgan threw himself upon his hard couch, and gave himself up to reflections upon the events which had so lately and so rapidly succeeded each other. He was aware that he had sinned past all hopes of forgiveness. Within twenty-four hours he had fallen from the command of a regiment, and being an especial favourite with the general, to be, what—a disgraced and broken soldier. Condemned to retire from scenes of glory, the darling passions of his heart—for ever to abandon the "fair fields of fighting men," and in obscurity, to drag out the remnant of a wretched existence, neglected and forgotten. And then his rank, so hardly, so nobly won, with all his "blushing honours," acquired in the march across the frozen wilderness of the Kennebeck, the storming of the Lower town, and the gallant and glorious combats of Saratoga.

The hours dragged gloomily away, night came, but with it, no rest for the troubled spirit of poor Morgan. The drums and fifes merrily sounded the soldier's dawn, and the sun arose, giving "promise of a good day." And to many within the circuit of that widely-extended camp, did its genial beams give hope, and joy and gladness, while it cheered not with a single ray, the despairing leader of the woodsmen.

About ten o'clock, the orderly on duty reported an arrival of an officer of the staff from headquarters, and Lieutenant-col. Hamilton, the favourite aid of the commander-in-chief, entered the markee. "Be seated," said Morgan; "I know your errand, so be short, my dear fellow, and put me out of my misery at once. I know that I am arrested; 'tis a matter of course. Well, there is my sword; but surely, his excellency honours me, indeed, in these last moments of my military existence, when he sends for my sword by his favourite aid, and my most esteemed friend. Ah, my dear Hamilton, if you knew what I had suffered since the cursed horse came out to tempt me to ruin."

Hamilton, about whose strikingly-intelligent countenance, there always lurked a playful smile, now observed: "Colonel Morgan, his excellency has ordered me to"—"I knew it," interrupted Morgan, "to *bid* me prepare for trial! Guilty, sir, guilty, past all doubt. But then, (recollecting himself,) perhaps my services might plead—nonsense; against the disobedience of a positive order? no, no, it is all over with me, Hamilton, there is an end of your old friend, and of Colonel Morgan." The agonized spirit of our hero then mounted to a pitch of enthusiasm as he exclaimed: "But my country will remember my services, and the British and Hessians will remember me too, for though I may be far away, my brave comrades will do their duty, and Morgan's riflemen be, as they always have been, a terrour to the enemy."

The noble, the generous souled Hamilton could no longer bear to witness the struggles of the brave unfortunate, he called out: "Hear me, my dear colonel, only promise to hear me for one moment, and I will tell you all." "Go on, sir," replied Morgan, despairingly, "go on." "Then," continued the aiddecamp, "you must know that the commanders of regiments dine with his excellency to-day." "What of that?" again interrupted Morgan, "what has that to do with me, a prisoner and—" "No, no," exclaimed Hamilton, "no prisoner, a once-offending, but now forgiven soldier, my orders are to invite you to dine with his excellency to-day at three o'clock, precisely; yes, my brave and good friend, Colonel Morgan, you still are, and likely long to be, the valued and famed commander of the rifle regiment."

Morgan sprang from the camp-bed on which he was sitting, and seized the hand of the little great man in his giant grasp, wrung and wrung till the aiddecamp literally struggled to get free, then exclaimed: "Am I in my senses, but I know you, Hamilton, you are too noble a fellow to sport with the feelings of an old soldier." Hamilton assured his friend that all was true, and kissing his hand as he mounted his horse, bid the now delighted colonel remember three o'clock, and be careful not to disobey a second time, galloped to the headquarters.

Morgan entered the pavilion of the commander-in-chief as it was fast filling with officers, all of whom, after paying their respects to the general, filed off to give a cordial squeeze of the hand to the commander of the rifle regiment, and to whisper in his ear words of congratulation. The cloth removed, Washington bid his guests fill their glasses, and gave his only, his unvarying toast; the toast of the days of trial, the toast of the evening of his "time-honoured" life, amid the shades of Mount Vernon:—"All our friends." Then, with his usual oldfashioned politeness, he drank to each guest by name. When he came to "Colonel Morgan, your good health, sir," a thrill ran through the manly frame of the gratified and again favourite soldier, while every eye in the pavilion was turned upon him. At an early hour, the company broke up, and Morgan had a perfect escort of officers to accompany him to his quarters, all anxious to congratulate him upon his happy restoration to rank and favour, all pleased to assure him of their esteem for his person and services.

And often in his afterlife did Morgan reason upon the events which we have transmitted to the Americans and their posterity, and he would say, "What could the unusual clemency of the commander-in-chief towards so insubordinate a soldier as I was, mean? Was it that my attacking my enemy wherever I could find him, and the attack being crowned with success, should plead in bar of the disobedience of a positive order? Certainly not. Was it that Washington well knew I loved, nay, adored him above all human beings? That knowledge would not have weighed a feather in the scale of his military justice. In short, the whole affair is explained in five words: It was my first offence!"

The clemency of Washington to the first offence preserved to the army of the revolution one of its most valued and effective soldiers, and had its reward in little more than two years from the date of our narrative, when Brigadier-general Morgan consummated his own fame, and shed an undying lustre on the arms of his country, by the glorious and ever-memorable victory of the Cowpens.

Nearly twenty years more had rolled away, and our hero, like most of his companions, had beaten his sword into a ploughshare, and was enjoying in the midst of a domestick circle, the evening of a varied and eventful life. When advanced in years, and infirm, Major-general Morgan was called to the supreme legislature of his country, as a representative from the state of Virginia. It was at this period, that the author of these memoirs had the honour and happiness of an interview with the old general, which lasted for several days. And the veteran was most kind and communicative to one, who, hailing from the immediate family of the venerated chief. found a ready and a warm welcome to the heart of Morgan. And many, and most touching reminiscences of the days of trial were related by the once-famed leader of the woodmen, which were eagerly devoured and carefully treasured by their youthful and delighted listener, in a memory of no ordinary power.

And it was there the unlettered Morgan, a man bred amid the scenes of danger and hardihood that distinguished the frontier warfare, with little book-knowledge, but gifted by nature with a strong and discriminating mind, paid to the fame and memory of the father of our country, a more just, more magnificent tribute than, in our humble judgment, has emanated from the thousand and one efforts of the best and brightest geniuses of the age. General Morgan spoke of the necessity of Washington to the army of the revolution, and the success of the struggle for independence. He said: "We had officers of great military talents, as for instance, Greene and others; we had officers of the most consummate courage and enterprise in spirit, as, for instance, Wayne and others. One was yet necessary, to guide, direct and animate the whole, and it pleased Almighty God to send that one in the person of George Washington."

There is nothing that requires so strict an economy as our benevolence. We should husband our means as the agriculturist his manure, which if he spread over too large a superficies, produces no crop, if over too small a surface, exuberates in rankness and in weeds.

The greatest and the most amiable privilege which the rich enjoy over the poor, is that which they exercise the least—the privilege of making them happy.

THE MUSHROOM.

This well-known production belongs to the tribe of *fungi.* The fungi appear to form the last link in the chain of vegetable life, connecting organized bodies with inorganized matter. "In simplicity of form and structure, they differ widely from the other vegetable tribes, as they present neither leaves nor flowers. Destined to spring up in the midst of corruption, and to draw their nourishment from putrefaction, the fastidious observer turns from them with disgust; and the true naturalist, while aware of their importance in the scale of nature, finding them too perishable in their nature to be easily preserved in his cabinet, too capricious in their growth to be cultivated in his garden, and too sportive in their forms to be successfully delineated with his pencil, leaves them with regret, to rot on the dunghill, or to wither in the wood."

They were formerly supposed to spring from the glutinous results of putrefied substances, but the wiser views of later philosophers have clearly shown that the impious doctrine of organized bodies being produced from inorganized matter, without the intervention of the creative power of the Maker of all things, is a wicked fallacy, and utterly at variance with all the laws of nature as far as our limited powers have been able to trace them.

For a long time the seeds of the mushroom tribe remained undiscovered; but recent and more careful observations have shown their existence, though their minute size renders them very difficult of detection. Perhaps no class of vegetables is more widely distributed than that of the fungi; for not only do the *boleti* which are found on decayed wood and on the borders of forests; the toadstools, the puffballs, and a variety of other larger species, belong to this tribe, but every indication of mouldiness on old leather, badly-preserved fruit, mildew, &c., is but a collection of innumerable minute productions of the same nature.

"The fungi exhibit some of the finest colours of the vegetable kingdom. Nature having withheld from this portion of her plants, those flowers which form the chief beauties of the higher orders, and even the leaves with which they are clothed, has profusely scattered her colours over the whole surface of the mushrooms, ornamenting the cap with one colour, the gills with a second, and the stem with a third. Let but the lover of natural beauty free his mind from prejudice, and then examine the forms and colouring of the fungi, and he will be compelled to admit that many of them rival in symmetry and splendour, the rose and the lily, those gaudy ornaments of Flora."

Beautiful, however, as some of these vegetable productions are, and useful as other kinds prove to mankind, yet the greatest portion of these tribes are noxious if not poisonous, and so little difference, at times, exists between the wholesome and the deleterious species, that it is with great difficulty they are distinguished. In general, we ought to reject all those which grow on the skirts of woods, and on decayed trees, those whose smell is displeasing, or taste hot to the palate, all those which, when broken, give out a milky juice, and generally all that are finely coloured. In many parts abroad, however, some of the noxious kinds are eaten, after being pickled or boiled; it is said that the poisonous quality is soluble, and therefore extracted by the liquid: however this may be, the experiment is too dangerous to be attempted, and the only kinds of fungi decidedly fit for the table, are the common mushroom, and the champignon.

The common mushroom is found in its early state as a *button.* When its cap is in the form of a roundish knob, as seen in the engraving, and in its adult state, when it appears like an inverted saucer; its substance is fleshy, and its gills (the under part) have a pinkish hue, perceptible even when their colour is darkened by age; the smell also is agreeable.

The Toadstool, *Agaricus ovatus.*

The toadstool, on the contrary, which most nearly resembles it, is more flimsy in its texture, exhales an unpleasant odour, and the gills are of a dark colour, nearly black, without the least blush of pink, and become almost fluid when bruised between the fingers.

The champignon, the other species of eatable fungus, is not so readily distinguished from many other small sorts; it generally grows in circles, and is of a light-brown colour and conical shape, like a cap.

Those, however, who are not accustomed to gather mushrooms, should be extremely cautious in selecting any of the smaller kinds for the purpose of food. Some people are in the habit of placing a silver teaspoon in the water in which they boil mushrooms, believing, that if they are noxious, the silver will be turned black; but although this may take place in the case of the most hurtful, it is not so certain when applied as a test to the less dangerous kind.

The Champignon, *Agaricus pratensis*.

The three following species of fungi are decidedly poisonous.

Agaricus plicatilis.

Agaricus glutinosus.

Boletus spumosus.

METEORICK STONES.

A shower of meteorick stones fell in Connecticut, December, 14, 1807. It was observed about a quarter past six The day had just dawned, and there was little light except from the moon, which was just setting. It seemed to be half the diameter of the full moon; and passed, like a globe of fire, across the northern margin of the sky. It passed behind some clouds, and when it came out, it flashed like heat lightning. It had a train of light, and appeared like a burning firebrand carried against the wind. It continued in sight about half a minute, and, in about an equal space after it faded, three loud and distinct reports, like those of a four-pounder near at hand, were heard. Then followed a quick succession of smaller reports, seeming like what soldiers call a running fire. The appearance of the meteor was as if it took three successive throes, or leaps and at each explosion, a rushing of stones was heard through the air, some of which struck the ground with a heavy fall.

The first fall was in the town of Huntington, near the house of Mr. Merwin Burr. He was standing in the road, in front of his house, when the stone fell, and struck a rock of granite about fifty feet from him, with a loud noise. The rock was stained a dark lead colour, and the stone was principally shivered into very small fragments, which were thrown around to a distance of twenty feet. The largest piece was about the size of a goose egg, and was still warm.

The stones of the second explosion fell about five miles distant, near Mr. William Prince's residence, in Weston. He and his family were in bed when they heard the explosion, and also heard a heavy body fall to the earth. They afterwards found a hole in the earth, about twenty-five feet from the house, like a newly dug post-hole, about one foot in diameter, and two feet deep, in which they found a meteorick stone buried, which weighed thirty-five pounds. Another mass fell half a mile distant, upon a rock, which it split in two, and was itself shivered to pieces. Another piece, weighing thirteen pounds, fell half a mile to the northeast, into a ploughed field.

At the last explosion, a mass of stone fell in a field belonging to Mr. Elijah Seely, about thirty rods from his house. This stone falling on a ledge was shivered to pieces. It ploughed up a large portion of the ground, and scattered the earth and stones to the distance of fifty or a hundred feet. Some cattle that were near, were very much frightened, and jumped into an enclosure. It was concluded, that this last stone, before being broken, must have weighed about two hundred weight. These stones were all of a similar nature, and different from any commonly found on this globe. When first found, they were easily reduced to powder by the fingers, but by exposure to the air they gradually hardened.

Other showers of meteorick stones have been known, but this is one of the most remarkable. It is supposed that the meteor was more than a mile in diameter.

In literature, our taste will be discovered by that which we give, and our judgment by that which we withhold.

When we feel a strong desire to thrust our advice upon others, it is usually because we suspect their weakness; but we ought rather to suspect our own.

PHYSICAL GEOGRAPHY.

Of the Atmosphere.

The earth is everywhere surrounded by a mass of gaseous matter, called the atmosphere, which is preserved at its surface by the force of gravity, and revolves together with it around the sun. It is by no means a simple element. According to the analyses of modern chymists, one hundred measures of pure atmospherick air, consist of twenty or twenty-one volumes of oxygen, and eighty or seventy-nine of nitrogen. But the atmosphere is never pure; for it always contains a certain variable quantity of carbonick acid and watery vapour, besides the odoriferous matter of flowers, and other volatile substances, which are also frequently present. The carbonick acid, however, seldom exceeds one in one hundred parts. It is colourless and invisible; excites neither taste nor smell when pure, and is not sensible to the touch, unless it is in motion. It presses equally on every side; and its pressure, at the level of the sea, is equal to a weight of about fifteen pounds on every square inch of surface. It is highly compressible and elastick; so that its particles admit of being approximated, to a great extent, by compression, and expand, to an extreme degree of rarity, when the tendency of its particles to separate is not restrained by extreme force. In consequence of its own pressure, the atmospherick air is most dense, near the surface of the earth, and most rare, the furthest from it. It is only the oxygen it contains that is fit for animal life; if it existed, however, in too great a proportion, it would excite our vital spirits to an excessive degree—it would exhaust our strength, and, in fact, make us live too fast. But nitrogen, by itself, is destructive to animal life. So, then, it is the proper mixture of the two which renders the atmosphere wholesome to animal existence.

In consequence of the various changes of temperature, the combined operation of other causes, vapours are produced and suspended in the atmosphere; and it is also visited by other fluids, that are supposed to be aeriform. The most common vapours which operate in the atmosphere are called clouds or mists. It is supposed, by some, that clouds are elevated to the higher regions of the atmosphere by negative electricity, and are driven near the surface by positive electricity. As clouds are generally used as the indices, by weatherwise people, to prophecy the character of the coming weather, we present the following, brief sketch of a nomenclature of clouds, recently constructed by Mr. L. Howard:—

"1. Cirrus; resembling a lock of hair, or a feather; the most elevated of clouds; generally white and thin; considered, generally, as an indication of wind. The mare's tail of sailors. 2. Cumulus; arranged in dense, convex or conical heaps; generally gathers in the afternoon of clear days, and disappears in the evening. 3. Stratus; a continuous level sheet of clouds, including mists and fogs, which rise by night, and disappear in the morning. 4. Cirro-cumulus; a system of small, roundish clouds, in close order; often resembling balls of flax, with one end unwound; frequently consisting of several distinct strata, diminishing with their increase of altitude; a sign of fair weather. 5. Cirro-stratus; a horizontal, undulating sheet, thinner at its circumference, thickening towards the horizon, often resting on hills and mountains, and prognosticating rain; generally accompanying bolos, parhelions, &c. 6. Cumulo-stratus; formed by a union of the cumulus, with one of the two latter forms; a cumulus flattened, and projecting at its summit, or with a cirro-stratus settling above it; increases rapidly, and soon overcasts the sky; generally precedes thunder-storms also snow-storms. 7. Nimbus; a dense cloud spreading above, in a crown of cirrus, and passing beneath into a shower; the proper rain cloud. Besides these, however, there are many other modifications, arising from the varied combinations of the simpler forms."

For the Family Magazine.

ON HAPPINESS.

Happiness is the chief object for which man labours. And yet, how seldom does he pause in the pursuit, to consider wherein it consists, and how he may best obtain it. The Stoicks, from their own experience and a close observation of men, were convinced that the desires of the human heart were boundless and insatiable. They, therefore, would have persuaded man to suppress those feelings which it was impossible to satisfy, and to exchange those moral links which bound him to the external world, for more than brute stupidity; thus becoming, as it were, a shadow on the face of nature, alike insensible to pain or pleasure.

The Epicureans discerned a close connexion between the enjoyments of the mind and a healthy state of the body; and from this inferred, that happiness coexisted with exemption from pain, and a due regulation of the animal propensities. But death, and the thousand pangs that flesh is heir to, made inroads on their system, and taught them how frail the object in which they had trusted. In time, the drunkard, the glutton, and the degraded libertine, became the sole representatives of this doctrine; and each, as he quailed beneath the open gaze of virtue, felt and acknowledged, that the pleasures of sense were of short duration, and cloyed by repetition

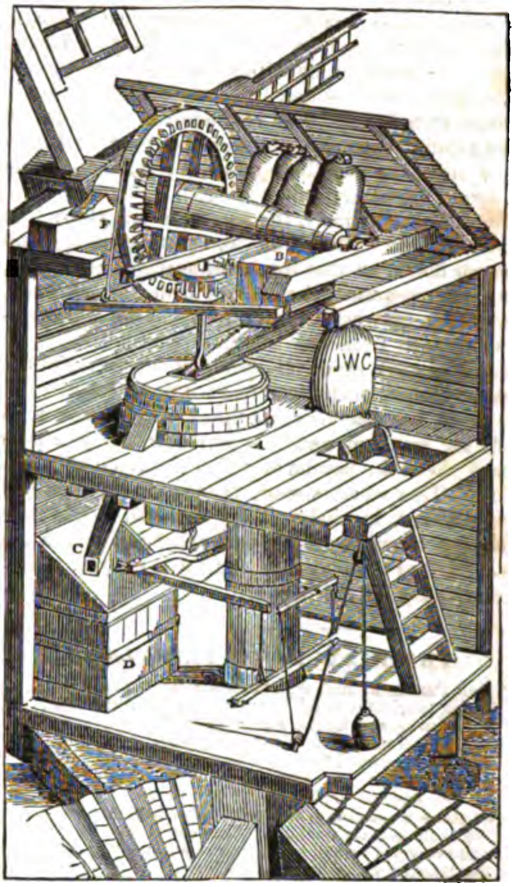
These two sects of philosophers were exceptions to the general mass of men, who have ever looked for happiness in the possession of some external object. One, trampling on the blood of thousands, breaks through every rule of justice to gain a world; and then turns miserable from his conquest, because he finds not that for which he toiled. Another, whose aim was wealth, looked from the lofty rocks of Salamis upon his thousand ships, and wept, because he knew that time would break the chain that bound them to him. He, too, whose intellectual efforts discovered the laws which held God's universe in place, spent the last remnant of his days a melancholy verification of what the wise man uttered: "Much study is a weariness to the flesh, and the acquisition of knowledge is but the getting of sorrow." The man surrounded by the blessings of the social compact, perhaps from disappointed love, ungrateful friends, or rich men's arrogance, becomes weary of society, and thinks the savage state most free from care and trouble: whilst the lone tenant of the wilderness turns to the hills with glistening eyes to gain a precarious pittance in the labours of the chase. A stranger to the arm that rules the elements, he lives the constant victim of some groundless fear; he is startled at the rustling of a leaf, and hears a demon's laugh in every whistling wind. And even the man who aims at moral improvement, finds those powers he would dedicate to God alloyed;

"Half dust and half Deity, alike unfit,
* * * * To sink or soar."

The curse of Heaven seems resting on the universe of men; and he who would secure that portion of happiness which still remains to mortals, must lean on superhuman power; he must supplicate the aid of Him who said, "I will not break the bruised reed, or quench the smoking flax"—bearing the ills of life with manly fortitude, grateful for what he gives us, who knows best what we need, and watching the approach of death as the signal which calls us from a troubled conflict.

INTERIOUR OF A WINDMILL.

The exteriour of a windmill is familiar to most persons, and watermills are common on small rivers and running streams. Whether the moving force be wind or water, it is employed for the purpose of turning round horizontally, by means of an upright axle, a thick, flat, circular stone, over another equal and similar stone, which is fixed beneath it. The surfaces of the two stones which are next each other, are cut into shallow furrows, in such directions, as may create by the moving round of the upper stone, over the fixed one below it, the greatest quantity of rubbing and grinding motion. The two surfaces do not touch each other, and the small distance which is left between the stones, is adjustable at pleasure, according to the nature of the grain: the nearer the stones work together, the finer will be the flour into which the grain is ground. The fans of the windmill, or the wheel of the watermill, which cause the millstone to revolve, also by means of intermediate wheels, give motion to other parts of the machine intended to effect the several operations which the grain has to go through, to prepare it for grinding.



In the figure, the two sides and half the roof of an ordinary windmill are supposed to be removed, to allow of the interiour being seen; every part is omitted but what is immediately necessary to the grinding:—A is a sort of tub, enclosing the millstones, by which case the flour is preserved from being wasted and scattered about; C is a funnel-pipe through which the flour passes down into the bin D; B is the *hopper*, into which the corn is put, and whence it flows gradually between the stones through a hole at the top of A; to promote this passage of the grain, a jogging motion is given to the hopper by a simple contrivance; this causes the *clacking* of the mill, one of those sounds which has ever delighted the ears of lovers of nature and of poets; the large wheel F, on the axle of the fans, turns the *lantern-pinion* G on that of the stones, and gives the upper one its rotatory motion.

The object of the first operation, is to dry the corn, so as to make it fit for grinding; this is performed in a kiln, the grain being laid on a tile floor, perforated with small holes, which allow the hot air, from a fire beneath, to penetrate through the layer of corn, and to dry it sufficiently. The tiles being very slow conductors of heat, the grain is not at all scorched in the process. When it has been sufficiently dried, the grain is removed to lofts to cool, and mellow, which takes about five or six days.

The next process is cleaning the corn, or freeing it from all dirt, earth, &c., which may have become mixed with it. The machine to effect this is a cylinder, composed of iron-wire net, the meshes being wide enough to admit of the smallest grains, small gravel and dust, falling through between them.—This *separator*, as it is called, is commonly placed beneath the loft-floor, on which the grain has cooled, so that this can be let down into the cylinder at once, through trap-doors. The cylinder is made to revolve rapidly, the motion sifting the corn, and freeing it from the smaller extraneous matters, while the larger are afterwards separated by hand.

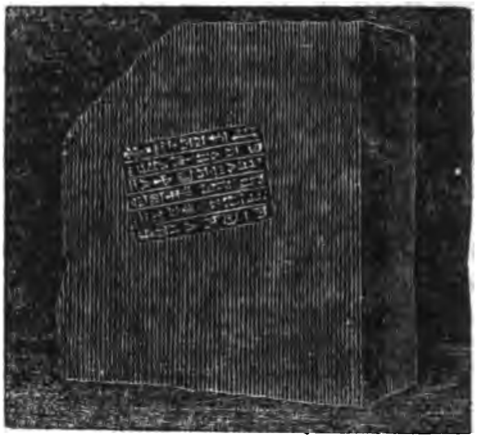
From the separator, the grain is transferred to another double cylinder of iron-plate, punched full of small holes, so that the inner surfaces are rough, like a nutmeg-grater; the corn, by being turned round, and shaken between the two surfaces of the cylinders, is freed from the hairiness which remains at one end of each grain, consisting of the points of the floral envelopes of the fruit in a withered state. But the grain yet requires another sifting, before it is ready for grinding, and this is performed in a long square chest, the bottom of which is formed of wire-gauze. This sieve is made to move backwards and forwards, and to shake the grain well, while four light fans blow away the dust and chaff which the motion brings to its surface, until it is entirely cleaned and ready for the hopper.

THE HISTORY OF PRINTING.

"Hail, PRINTING! hail, thou thrice illustrious ART!
Which taught the mind, and which reformed the heart,
Bless'd with new light a superstitious age,
And purged the relicks of barbarick rage.
From thee celestial streams of learning flow,
And to thy power we pure religion owe:
By thee assisted, Luther lashed the crimes
Of Rome's vile clergy, and reform'd the times;
While off their rev'rend mask Erasmus drew,
And every pious fraud exposed to view;
The labour finished by thy friendly aid,
Which Huss and Wicklif long in vain essay'd
See distant climes, in *this* auspicious hour,
Receive with transport learning's sovereign power!
Behold this art in famed Byzantium rise,
And barbarous sultans hail the mighty prize:
High it advances, o'er the multi's rage,
Though priests the ruin of their craft presage.
O! would indulgent Heaven by this restore
To eastern lands the arts they lost before:
By this make Turks their native rage forego,
And the vile frauds of Mecca's prophet show:
While Asia's realms enjoy a milder doom,
While Greece its Athens boasts, and Greece a second Rome;
O'er distant worlds while truth and freedom shine,
And conscious nations bless the ART DIVINE."

PRINTING is the *art* of taking impressions from characters or figures, moveable or immoveable, on paper, vellum, cotton, linen, silk, or any other material of a similar nature. Of this art there are three kinds, namely: the one from moveable letters, for books; the other from copper or other plates, for pictures; and the last from blocks, in which the representations of birds, flowers, &c., are cut for printing calicoes, linen, silk, &c. The first of these is called common, or letter-press printing; the second, rolling-press printing; and the third, calico printing Of these several branches, letter-press printing is the most curious, and hence deserves our chief attention; for to it are greatly owing our deliverance from ignorance and errour, the revival of learning, the progress of the sciences, and the remembrance of numberless improvements in the arts, which, without this noble invention, would have been either lost to mankind, or confined to the knowledge of a few. From its having thus offered so much facility to the dissemination of knowledge among mankind, it may rather be considered as an invention of inspiration, than as a common occurrence among the improvements, which accident, from time to time, has suggested to the ingenious.

If we consider the origin of printing as unconnected with the idea of forming books, the first step towards the art of printing must be acknowledged to have been made by the Babylonians, as exemplified by the inscriptions or impressions made on the bricks which have been found among the ruins of their capital, the once celebrated city, Babylon. The annexed engraving represents a Babylonish relick upwards of 4000 years old.



As the country around Babylon was deficient in stones, this want was supplied by abundance of earth fit for composing excellent bricks. The "Tower of Babel," therefore, according to sacred and profane authors, was built entirely of bricks; the "Temple of Belus," the largest of all the ancient temples, was built of the same materials; and the "Hanging Gardens," the famous "Walls," and all the other edifices of Babylon, the bridge and obelisk excepted, were also of bricks.* These bricks served not only for building, but were employed as the most ancient tables for writing upon. It is well known that the first materials used for writing were not of paper or parchment, and that many centuries had elapsed before such commodious articles as pen and ink were invented. The first and most obvious tablet would be the earth itself; and we read in the sacred Scriptures, that Jesus Christ wrote on the sand.† But as this writing would soon be obliterated, to render it more permanent, rocks, or the walls of houses, would be employed, and the pen which would most readily suggest itself would, no doubt, be a nail, or some other pointed instrument capable of making an impression upon such bodies, as is shown by the annexed engraving. Thus, according to the testimony of Pliny, bricks were used at Babylon for preserving astronomical observations.[*]

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* See Herodotus, Diodorus, and Strabo.

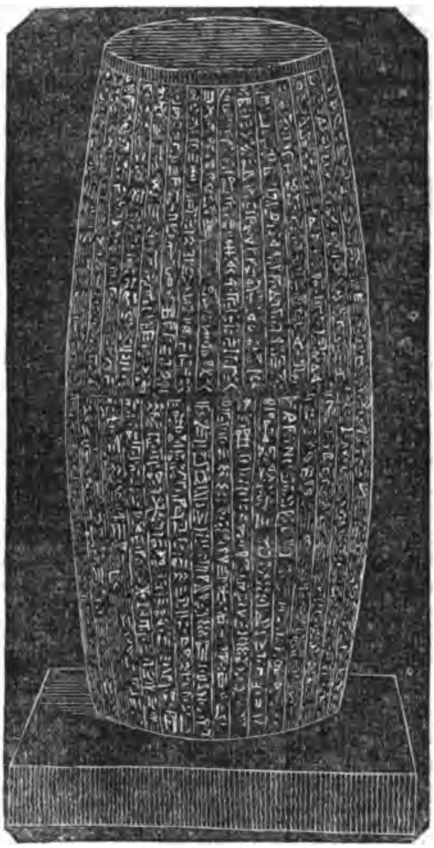
† John viii. 6.

On this subject, Mr. Bryant says, he cannot help forming a judgment of the learning of a people where such materials were employed; "for it is impossible to receive any great benefit from letters when they are obliged to go to a shard,[†] or an oyster-shell for information."

But Mr. Niebuhr states, that he has seen in Persia, where there is an abundance of marble, and sufficient knowledge of letters, inscriptions on bricks; that he had found inscriptions still legible after six or seven hundred years; and that the Babylonian astronomers, in all probability, inscribed on bricks such observations only as they wished to be preserved from alteration by copyists, or from the injuries of time.

The Chaldeans also might have continued the ancient custom of stamping and engraving on bricks, even when they had better materials for. writing upon. Thus we find the Chinese, though well acquainted with writing, and though the use of paper, ink and pencils has been long known among them, still they employ their *abacus*[‡] for reckoning, as the Greeks and Romans did in ancient times;[§] and the Bramins, in India, though sufficiently learned, and possessing a copious alphabet and cyphers, perform their astronomical calculations and mathematical problems without either pen or pencil. For this purpose they use a kind of shells, called *Le Gentil, cauris;* by means of which, he says, they calculate eclipses of the sun and moon with astonishing speed and accuracy.

Amongst the Egyptians the most ancient learning was inscribed on columns. The columns of Hermes, near Thebes, are famous in antiquity; and it is certain that many things were borrowed from them by the Egyptian historians and the Greek philosophers. Sanchoniathon[‖] and Manetho[¶] made use of them for their histories. Pythagoras[**] and Plato[††] both read them, and borrowed from them their philosophy. In Crete, also, there were very ancient pillars, on which was inscribed an account of all the ceremonies practised by the Corybantes, in their sacrifices. In the time of Demosthenes, there still existed a law of Theseus written on a pillar of stone;[*] they must, at least, have had pillars of brick; for Democritus is said to have transcribed his moral discourses from a Babylonish pillar.[†] And that pillars of brick were usual in those times, we have the testimony of Josephus respecting two pillars being erected by the descendants of Seth before the flood, one of which was of stone, and the other of brick; which, though not to be entirely depended upon, confirms at least the ancient practice of erecting "pillars of brick" for inscriptions, and for preserving matters relating to the sciences and literature.[‡]



The object of the barrel-shaped figure which is annexed, is evident from its appearance; and that it was a work of great public importance at the time it was executed there can be no doubt; but whether the characters on it are engraved or impressed, is now unknown. Besides employing pillars for recording historical annals, astronomical observations, and the laws, it was an almost universal practice among ancient nations to write upon them.[§] The pillars erected by Osiris, Bacchus, and Hercules, in the course of their expeditions, to perpetuate the remembrance of them, were very famous in antiquity. Sesostris, says Diodorus,[‖] erected in all the countries which he conquered, columns inscribed with the sacred characters of the Egyptians. Darius Hystaspes ordered to be engraved in Greek and Assyrian characters, on two columns, the names of all the nations which he commanded;[¶] and Germanicus saw in Thebes columns on which the different kinds of tribute, raised by Rameses from his subjects were engraved.* It is not then to be wondered at, if the writing of the ancients was perpendicular rather than horizontal; columns and pillars being much fitter for the former manner of writing than for the latter; and this original way of writing on columns or pillars may be the reason why we find the Babylonian writing preserved on the bricks, of which we now treat, and of which engravings are here given, to be perpendicular rather than horizontal. This, indeed, seems to have been the most ancient manner of writing, as we see from the example of the Egyptians and the Chinese. These nations, and, according to Diodorus, the Ethiopians also, wrote perpendicularly from the top to the bottom; and this is the proper direction of the Babylonian inscriptions, as is proved by the previous engravings. We find, then, a wonderful conformity among these three ancient learned nations, the Babylonians, the Chinese, and the Egyptians. They all wrote perpendicularly; and, that the words of one column might not be confounded with those of another, they separated the columns by parallel lines, as may be seen not only on the Babylonian bricks, and on ancient Egyptian hieroglyphical monuments, but also in any Chinese book or writing to this day. It is likewise very remarkable that the Syrians still write perpendicularly, like the Babylonians, their ancestors. They turn the paper indeed, when they have done, so as to read horizontally; but, in writing, they begin at the top, and write straight down to the bottom. The Moguls and the Tartars in China, having derived their alphabet from the Syriack, write also perpendicularly; not from the right to the left, like the Chinese, but from the left to the right, like the Syrians. In this they differ not only from the Chinese, Japanese, and all those nations who make use of the Chinese characters, but also from the Babylonians. As the ancient Babylonian characters agree with the Chinese in regard to direction, they appear to have agreed also in regard to their value; for, as the Chinese express whole words by a single character, or, at least, by a group of simple characters, this seems to have been the practice of the Babylonians. Indeed, the inscriptions on the Babylonian bricks cannot be composed of alphabetick or syllabick characters; for, if they were, the same forms must soon recur, which is not here the case. On the contrary, we find single groups, composed of different kinds of nails, just like the various strokes in the Chinese characters, which are all different from each other.

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[*] Pliny's Natural History.

[†] Shard, a fragment, or piece of a broken earthen vessel.

[‡] Abacus, a table strewed over with dust, on which they draw their schemes and figures.

[§] Martin.

[‖] A Phœnician historian, born at Berytus; or, according to others, at Tyre. He flourished a few years before the Trojan war, B. C. 1184. He wrote, in the language of his country, a history of the antiquities of Phœnicia and neighbouring places. This history was translated into Greek, but a few fragments of which are extant.

[¶] Manetho, a celebrated priest of Heliopolis in Egypt. He wrote in Greek a history of Egypt, which has often been quoted by the ancients; the subject matter of which he asserts to have collected from the annals preserved on pillars in the Egyptian temples. The author maintained, that all the gods of the Egyptians had been mere mortals, and had all lived upon earth.

[**] Pythagoras, a celebrated philosopher, was a native of Samos, an island in the Mediterranean sea. He was greatly celebrated for his skill in musick, medicine, mathematicks, and natural philosophy. He was also distinguished by his discoveries in geometry, mathematicks, and astronomy. His system of the universe, in which he placed the sun in the centre, and all the planets moving in elliptical orbits round it, was deemed as chimerical, till the philosophy of the sixteenth century proved it to be incontestable. He flourished B. C. 500.

[††] Plato was a celebrated philosopher of Athens. He travelled through Italy and Egypt in search of knowledge. He returned to Athens, where his lectures were soon attended by a crowd of illustrious pupils. During forty years he presided over "The Academy," and there composed those Dialogues which have been the admiration of the world. He died B. C. 348.

[*] Goquet, Origin of Laws, Arts, &c. [†] Goquet.
[‡] Josephus. [§] Goquet. [‖] Diodorus Siculus. [¶] Herodotus.

Before the use of printing with types,† learning was necessarily limited to a very few persons in every country; books in manuscript could only be obtained at a price beyond the means of the common people to purchase,* and those were very scarce; consequently, the greater part of the population was compelled to remain in ignorance. Even the grand design of revelation, and the truth of the gospel, but for this art, must, at this period, have been shut out from the multitude, and known to none but the rich, or the religious orders, whose impositions on the ignorant might have continued as they were practised previous to the use of this very important invention.

The communication of mind and thought, without this art, must still have been confined to a very small circle; and had the works of our early reformers been limited to the number of books that the slow progress of writing could produce, superstition and priestcraft might still have held dominion over a benighted world, and science been the portion of a select number only; but the rapidity with which books have issued from the press, has rendered it impossible to obstruct the current of intelligence that now runs down from generation to generation, and, receiving tributary streams, has already increased in its course to a majestick tide of information and knowledge.

The invention of an art so valuable, must, as to its origin, form an interesting inquiry, and will be worth the investigation of the learned and the curious; but, like the invention of letters, the first projector of the scheme cannot be positively ascertained; and, like that grand discovery also, it was probably brought into use progressively, in different parts and by various persons. In England we have no record of printing before the fifteenth century, and though so recently established, we have no authentick account of who was actually the first practical operator.†

Antiquarians of different nations have endeavoured to decide this point, but they have neither agreed in their opinions, nor been successful in their researches; consequently it yet remains a mystery, and probably it will be impossible to fix any precise date for the origin of printing, or to mention any particular person to whom the art may be justly ascribed.

An ingenious writer attempts to account for this uncertainty in the following manner: "Two reasons may be assigned for this obscurity; namely, the imperfect state of printing while it remained in the possession of its inventor. 2d. Pecuniary motives induced the first printers, from the large sums which were usually paid for manuscripts, to sell their works as such; so that printing was for a period as much the counterfeit of, as the substitute for writing, it being a fac-simile of the most approved scribes. The few persons concerned kept the art a secret for some time, till their funds not being sufficient to answer the necessary expenses, these ingenious men were thus compelled to associate with persons of property, from the union of whose names a degree of doubt has arisen to whom the merit really belongs." And like the Grecian cities contending for the birth of Homer, so do the Germans for the invention of printing; and the cities warmest on this point of honour, are Mentz, Haarlem, and Strasburg; but the opinion that Strasburg was the native place of the art has been plausibly disputed; the main contention, therefore, seems to lie between Haarlem and Mentz. To each of these cities, however, it may be ascribed in a qualified sense, as they made improvements upon one another.

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* Tacitus.

† Before the invention of this art, the efforts of literary ingenuity were entirely confined within the very narrow limits of the pen. Fifty years were sometimes employed to produce one single volume!—an evidence of which occurred at the sale of the late Sir William Burrel's books, in 1796; among which was a MS. bible, on vellum, beautifully written with a pen, and illuminated, which had taken up half a century to perform. The writer, Guido de Jara, began it in his 40th year, and did not finish it until he had accomplished it in his 90th year, A.D. 1294, as appeared by the writer's own autograph at the front of the book; and it is evident, by the inspection of many MSS., that a very considerable length of time was necessary to finish what, by this curious art, is now multiplied in an astonishing degree.

* Pope Nicholas V. bid for St. Matthew's Gospel, in Hebrew, no less a sum than 5000 ducats. In the year 1462, copies of the Bible, printed by Faust, were sold in France at 60 crowns—a manuscript copy having before cost from 400 to 500 crowns.

† Mr. Meerman ascribes the first rudiments of printing to Laurentius, *aedituus*, or *custos* of the cathedral at Haarlem. But he supposes that Laurentius carried the art no farther than the use of separate wooden types, fastened together by threads: and that his first essay was made about the year 1430. He attributes the improvement of the art, by cut metal types, to Geinsfleich, senior, and his brother Guttenberg, assisted with money by Faustus, or Faust, at Mentz, at about the year 1444; and, lastly, he proves that the honour of completing the discovery, by the invention of cast types, is due to Peter Schoeffer, servant, and afterwards son-in-law, to Faust, in the same city, about the year 1452. Faust and Schoeffer concealed this new improvement by administering an oath of secrecy to all whom they intrusted, till the year 1462, when, by the dispersion of their servants into different countries, at the sacking of Mentz by Archbishop Adolphus, the invention was publickly divulged. The first book printed with these improved types was in 1459. From this time to 1466, Faust and Schoeffer continued to print a considerable number of books; particularly the two famous editions of Tully's Offices,—one in 1465, the other in 1466.

The first testimony of the inventor is that recorded by Hadrian Junius, in his "Batavia," page 253, edition of 1588; which, though it had been rejected by many, is of undoubted authority. Junius had the relation from two respectable men, Nicolaus Galius, who was his schoolmaster, and Quitinius Talesius, his intimate friend and correspondent. He ascribes the invention to Laurence Coster, (*æditus*, or *custos*, of the cathedral at Haarlem, at that time a respectable office,) upon the testimony of Cornelius, some time a servant to Coster, and afterwards bookbinder to the cathedral, an office which had before been performed by Franciscan friars. His narrative runs thus: "That walking in a wood near the city, he began first to cut some letters upon the rind of a beech tree, which, for fancy's sake, being impressed on paper, he printed one or two lines as a specimen for his grandchildren, the sons of his daughter, to follow. This having happily succeeded, he meditated greater things, as he was a man of ingenuity and judgment; and first of all, with his son-in-law, Thomas Peter, who left three sons, (all of whom attained the consular dignity,) invented more glutinous writing ink, because he found the common ink sunk and spread; and then formed whole pages of wood, with letters cut upon them."*

Coster printed only on one side of the paper, and in binding up the leaves the blank sides were pasted together, in order to make an unbroken continuity of the pages. There are several specimens of this mode of printing still remaining in Holland.

From the above it will be observed, the letters were first made of wood, but afterwards of metal. According to tradition, printing was carried on in the same house long after the time of Coster, and after the use of metal types became universal. But Coster seems to have carried the art no further than separate wooden types. What is a remarkable confirmation of this, Henry Spiechel, who wrote in the sixteenth century a Dutch poem, entitled "Hertspiegel," expresses himself thus:—

"Thou first, Laurentius,* to supply the defect of wooden tablets, adaptedst wooden types, and afterwards didst connect them with a thread to imitate writing. A treacherous servant surreptitiously obtained the honour of the discovery. But truth itself, though destitute of common and widespread fame—truth, I say, still remains."

No mention being made in the poem of metal types, is a circumstance that, had he been robbed of such, as well as of wooden ones, would scarcely have been passed over in silence. When Coster first advertised his first specimen of the art can only be guessed at. He died in 1440, after having published the Speculum Belgicum, and two editions of Donatus, all with different wooden types, which, it is probable, (considering the difficulties he had to encounter, and the many artists whom he must necessarily have had occasion to consult,) cost him some years to execute; so that the first essay might be about 1430, which nearly agrees with Petrus Scriverius, who says the invention was ten or twelve years before 1440.

As the "Donatus" has been several times mentioned by the writers of the controversy, it may be necessary, lest it should be supposed to have something excellent in it, to say, that its merits, as well as that of the History of the Apocalypse, the History of the Bible, the Speculum Humanæ Salvationis, and the Spiegel, consists only in being among the very first essays in the art of printing, before the invention of fusil or metal types.

The author of the "Colongne Chronicle," who wrote in the year 1499, almost fifty years after the discovery of printing, and who had his information from one Uric Zell, an old bookseller then living in Cologne, says: "Although the art of printing had been found out at Mentz, in the manner we now have it, yet the first hint or pattern was taken from the 'Donatus,' of Holland, which had been printed there: that the aforesaid art took its origin from them, though the latter invention is much superiour in contrivance and ingenuity."

It creates our surprise to find that this art, which has been styled "the nurse and preserver of the arts and sciences," should be so negligent of itself as not to leave the smallest record of its own origin; the inventors having been more ambitious of deserving, than of purchasing praise. Faust, indeed, when he could no longer prevent a discovery, gives an account of the inventors, and the manner in which the books were done, and throws some light upon this affair by placing at the end of his books the following colophon or inscription: "This present work, with all its embellishments, &c., was done, not with pen and ink, &c., but by a new-invented art of casting letters, printing, &c., by me, John Faust, and my son-in-law, Peter Schoeffer, in the famous city of Mentz, upon the Rhine."

As many cities have contended for the honour of this invention, and engaged the learned in defence of their respective claims, it cannot be deemed improper in this place to select the most considerable testimonies from those authors who wrote soon after the discovery, and were better acquainted with this matter than those who lived at some distance of time after it, and may be supposed to have followed their predecessors in the account they have given us of the origin of printing.

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* Other authors have ascribed the invention of this art to J. Regiomontanus, a celebrated mathematician, who was contemporary with Faust and Guttenberg, and lived pretty near them; but he removed to Nuremberg. It is said of Regiomontanus, that he made an iron fly spring from under his hand, fly round the room with a humming noise, and return to its first position; he is likewise *reported* to have made a wooden eagle, which flew from Nuremberg to meet the emperor, hovered over his head, and went back the same way with him!!! It was no wonder that some authors should give so universal an artist the repute of inventing printing. It is certain, however, he was a very early printer, although not the inventor. Many who have treated on this subject forbear to mention either the name of the inventor, or the place of his residence, yet unanimously give the honour to Gormany.

* Laurence.

The writers in favour of Haarlem have managed the controversy with great warmth, and charged Faust, one of the inventors, with robbing his supposed master, Laurence John Coster,* of many thousand weight of his materials on Christmas eve, when the family and most of the city were in prayer in church, with other such ridiculous stories, fabricated merely to deprive this great man of the honour which he had so long incontestably enjoyed. Had this been published in his lifetime, when he might have defended himself, or presently after his death, when his son-in-law, or some of his friends, might have done it for him, he had undoubtedly been cleared; but such an accusation was not hinted at till 125 years after, and then grounded only on suspicion, as Dr. Junius owns, who was the first to transfer this discovery from Mentz to Haarlem. Faust's name, however, died not with him, though some Dutch writers made use of his art to asperse his memory; but others, of several nations, rose immediately in his defence—in particular the learned Mallinkrott, dean of Munster, who, in his treatise, "De Ortu et Progressu Artis Typographicæ," has not only refuted what was advanced on the other side, but made such researches after the old monuments of the art, and collected so great a variety of testimonies, supported by undeniable facts, as seem at once to determine the controversy.

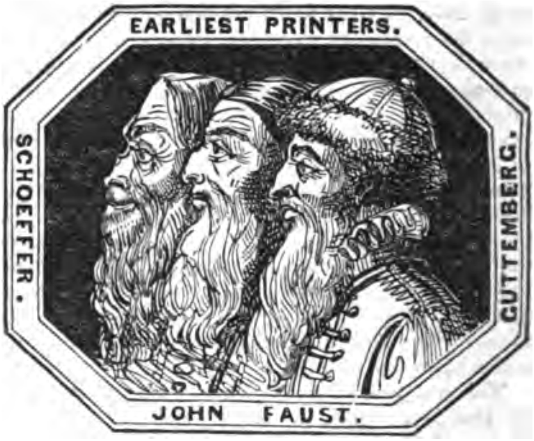
Mallinkrott, who handles his subject with great skill and discernment, has, with indefatigable industry, collected testimonies from both sides of the question, from the promulgation of the art to the time in which he wrote, (1640,) and placed them in the following order in the beginning of his work:—

For Mentz, before the dispute was started by Dr. Junius, ...	62
Those who have written on the same side, since Junius, ...	47
	109
Those who have written in favour of Haarlem, ...	13
Those who are neuters, ...	11
	24

By this list, it appears that the number are greatly in favour of Mentz.

The following engraving contains the portraits of the three celebrated men to whom it is generally acknowledged the world is principally indebted for the discovery of the art of printing. The subject from which this was copied is supposed to have been engraved by the famous Gubitz, of Berlin, from an old German painting.

TO
THE MEMORY
OF
JOHN GUTTENBURG, JUNIOR,
THE REPORTED INVENTOR;
AND
JOHN FAUST,
THE PROMOTER;
AND
PETER SCHOEFFER,
THE IMPROVER.


EARLIEST PRINTERS.
SCHOEFFER.
GUTTEMBERG.
JOHN FAUST.

THOUGH LAST, YET NOT LEAST, STANDS JOHN GEINSFLEICH, OR
GUTTENBERG, SEN.
This Medallion
Here presented, that posterity may know the men to whom they stand so much indebted.

The persons to whom the honour of this invention is severally ascribed by their respective countrymen, are Laurence John Coster, of Haarlem; John Guttenberg, John Faust, and Peter Schoeffer, of Mentz; and John Menteel, of Strasburg. Their first essays, however, were all made on wooden blocks, after the manner of the Chinese. The first books published at Haarlem were all printed in this manner; but they soon found the inconvenience of this method, and therefore bethought themselves of an improvement, which was by making single letters distinct from one another, and these being done in wood, gave room for a second improvement, namely, that of making them in metal; and, in order to that, forming punches, moulds, and matrices, for casting them. It is from this ingenious contrivance that we ought to date the origin of the present "art of printing," as contradistinguished to the method practised in China. The mode of impressing figures upon silk and cotton, which, according to the accounts given us by the Jesuits, had been practised by the Chinese many centuries before printing was known in Europe, seems, however, to have been the first step towards the introduction of this art to the knowledge of mankind. The invention of cards, which took place towards the latter end of the fourteenth century, was an intermediate step between block and letter-press printing. They were originally painted; but about the year 1400, a mode was discovered of printing them from blocks. The books of images succeeded; they are likewise printed from blocks, and the text is placed below, or on each side of the print. The bards are said to have carved their poems upon bars of wood, arranged like a gridiron. All these, which appear to be so many degrees of stereotype printing, naturally prepared the way for letter-press; but the origin and history of this invention are involved in great obscurity, as also is its introduction into England.

From what is said above, there is little doubt but the invention of taking impressions from wooden blocks is due to Haarlem; but the greater improvement and perfection of the art is certainly due to Mentz. (*To be continued.*)

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* Hadrian Junius calls him Laurentius, or Lawrence John; others, Lawrensz Janz Koster; others, Laurence Coster.

MEDICAL.

Luther V. Bell, M. D., is the author of a dissertation on the Boylston prize question, for 1835:—"What diet can be selected which will ensure the greatest probable health and strength to the labourer in the climate of New England? Quantity and quality, and the time and manner of taking it, to be considered."

The dissertation leads to the following conclusions, which we believe are sound and rational:—

1. A diet of *both* animal and vegetable food, is adapted to the condition of the New England labourer.
2. No grand errours exist in his present system of diet, and no radical change is demanded to ensure a greater amount of health and strength, though many minor, but still important errours exist.
3. The proportion of animal food usually customary is too great, and a considerable reduction would be expedient and advantageous, though it is impracticable to make a precise statement of the extent to which this is required, which must depend upon circumstances, as the amount of labour performed, climate, season, bodily constitution, habits of life, &c. A general statement of this fact can alone be made.
4. The amount of food in general, customarily used, is more than is necessary for the maximum of health and strength, though a more specifick statement of this abuse is also impossible. It must be left for each individual to attempt to reduce his quantity of food to that point at which he finds his mental and bodily powers most energetick. In searching for this point, the New Englander may be almost certain that he must look for it in a descending ratio.
5. The great principle in regulating diet, is to regard quantity rather than kind.
6. Perfect mastication and slow deglutition are important auxiliaries to the proper digestion of food.
7. A great variety of alimentary substances taken into the stomach at once, are calculated to do injury on several accounts.
8. The employment of alcoholick stimulants, and hot aqueous drinks, is deleterious to the functions of the stomach and to the general health.
9. The times of taking food, the state of the mental and moral functions, the quantity and times of exercise, &c., are all subjects of importance in the general subject of dieteticks;—in these particulars, the habits of the New England labourer do not vary much from a healthful standard.

WASHINGTON ON MATRIMONIAL ADVICE.

We accidentally fell upon the following excellent epistolary essay of General Washington, upon the subject of advising ladies in relation to matrimony, in Spark's 8th volume of Washington's Letters.—We recommend it to our readers as an interesting evidence of the complete discretion and wisdom that always characterized Washington's mind. Its plain sense and familiar knowledge of human nature is admirable; while at the same time it discloses the versatility of a mind that could unbend itself from the graver matters of war and state, and thus playfully and affectionately commune with the privacies of domestick life. The letter is directed to Lund Washington, Mount Vernon.

Rocky Hill, 20th September, 1783.

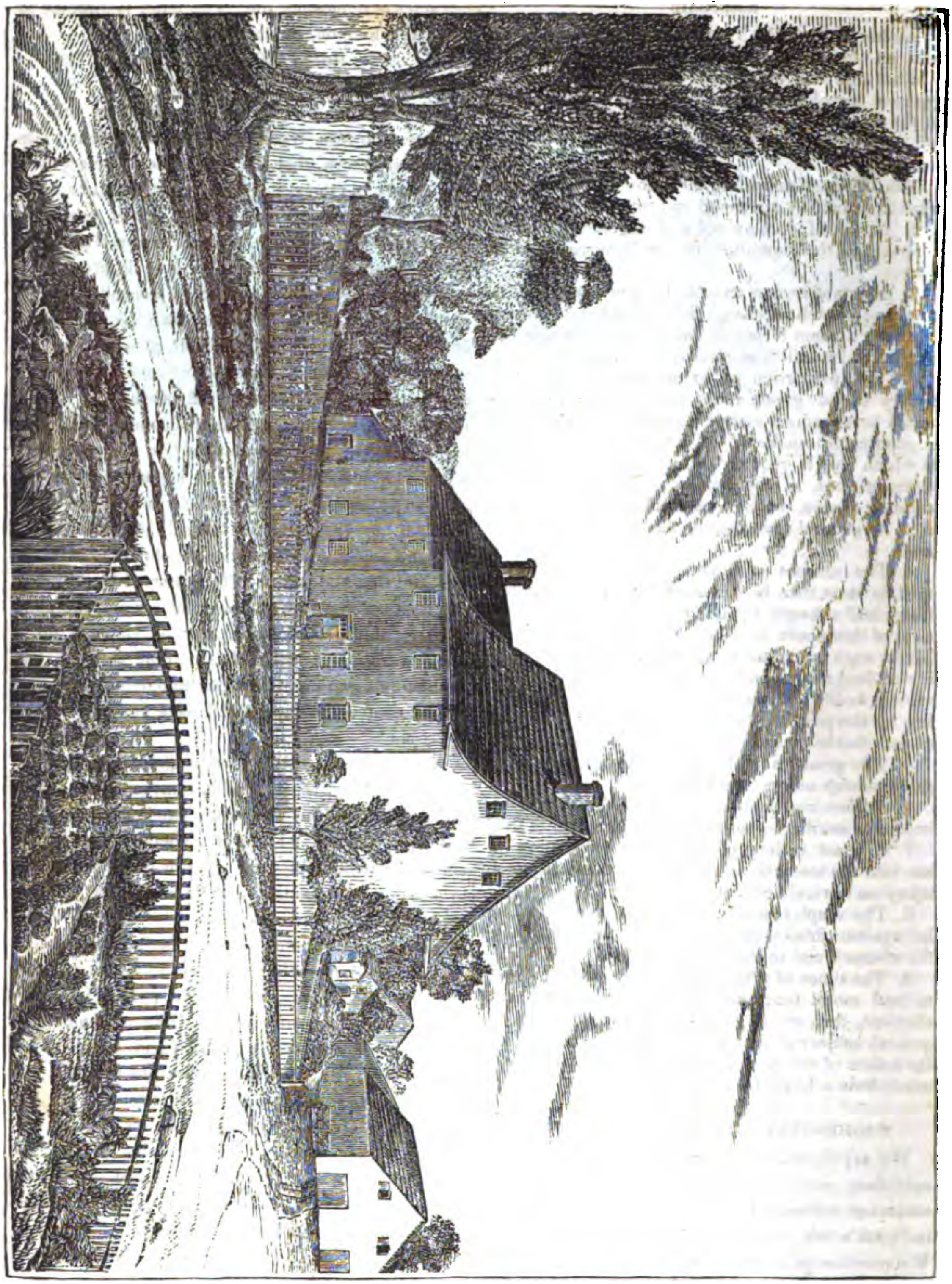
Dear Lund:—

Mrs. Custis has never suggested in any of her letters to Mrs. Washington, (unless ardent wishes for her return, that she might then disclose it to her, can be so construed,) the most distant attachment to D. S.; but if this should be the case, and she wants advice upon it, a father and mother, who are at hand, and competent to give it, are at the same time the most proper to be consulted on so interesting an event. For my own part, I never did, nor do I believe I ever shall, give advice to a woman who is sitting out on a matrimonial voyage: first, because I never could advise one to marry without her own consent; and, secondly, because I know it is to no purpose to advise her to refrain when she has obtained it. A woman very rarely asks an opinion or requires advice on such an occasion, till her resolution is formed; and then it is with the hope and expectation of obtaining a sanction, not that she means to be governed by your disapprobation, that she applies. In a word, the plain English of the application may be summed up in these words: "I wish you to think as I do; but, if unhappily you differ from me in opinion, my heart, I must confess, is fixed, and I have gone too far *now* to retract."

If Mrs. Custis should ever suggest any thing of this kind to me, I will give her my opinion of the *measure*, not of the *man*, with candour, and to the following effect: "I never expected you would spend the residue of your days in widowhood; but in a matter so important, and so interesting to yourself, children, and connexions, I wish you would make a prudent choice; to do which, many considerations are necessary; such as the family and connexions of the man, his fortune, (which is not the *most* essential in my eye,) the line of conduct he has observed, and the disposition and frame of his mind. You should consider what prospect there is of his proving kind and affectionate to you; just, generous, and attentive to your children, and how far his connexions will be agreeable to you; for when they are once formed, agreeable or not, the die being cast, your fate is fixed." Thus far, and no farther, I shall go in my opinions.

I am, dear Lund, &c.

Corruption is like a ball of snow, when once set a rolling it must increase. It gives momentum to the activity of the knave, but it chills the honest man, and makes him almost weary of his calling: and all that corruption attracts, it also retains; for it is easier not to fall, than only to fall once, and not to yield a single inch, than having yielded, to regain it



ELIAS HICKS—His Residence.

The engraving of the residence of the late Elias Hicks fell into our hands accidentally, and we have presumed to lay it before our readers in the hope that it may, together with a brief notice of the life and character of its late proprietor, prove not altogether uninteresting or unacceptable. In performing this duty—for whatever we can do that is of interest or profit to our readers we esteem a duty—we pray we may be understood to be entirely disinterested, and uninfluenced in our feelings or opinions by any partiality whatever, either to the man or to that highly respectable body of our countrymen, called Quakers, to which he belonged. We are aware, and probably, most of our readers are not ignorant of the fact, that an unfortunate controversy has existed in the Society of Friends, which, commencing about religious doctrines, finally led to disputes in relation to discipline and government. The dissension spread throughout the whole church, and affected even the relations of private life. It arrayed two distinct and separate parties in that Society, which have been commonly known as the "Hicksite," and the "Orthodox" party, both of them highly respectable in point of numbers as well as character. With what pertinence or justice Elias Hicks has been identified with the former as its leader or abetter, it is not our business to inquire. Nor do we pretend to meddle with the distinctive characteristicks of those styled "Orthodox." But it is sufficient for our purpose to remark, that this religious discussion in the Society of Friends finally led to two lawsuits, one of which was prosecuted in the court of chancery in the state of New Jersey, some three or four years since—the other in the supreme court of the state of New York, and excited a deep interest among an extensive portion of the community. The elements which directly led to the proceeding in equity, and which produced an exposition of the doctrines of the two parties, are briefly these:—

A school fund had been raised, under the direction of the Preparative Meeting of the Society of Friends, at Crosswicks, in the state of New Jersey, for the education of the children of the indigent members of that meeting, and a treasurer appointed to take charge of it. The plan originated at a Yearly Meeting in Philadelphia, to which this meeting at Crosswicks was attached, and under their auspices similar funds, for like purposes, were raised in other Preparative Meetings belonging to their jurisdiction. At about this time the two parties, before spoken of, had become established, and so completely detached from each other, as to form separate meetings. Before the controversy arose, Joseph Hendrickson had been appointed the treasurer of this school fund at Crosswicks, and in that capacity had loaned out a portion of the money to Thomas L. Shotwell, who was not a member of the Society of Friends, and who gave him the bond and mortgage upon which the suit was brought.

The parties, being completely divided, formed two separate Preparative Meetings at Crosswicks, and the "Hicksite" Preparative Meeting appointed Stacey Decow the treasurer of this school fund. Shotwell, who had become attached to that party, refused to recognise Joseph Hendrickson, who adhered to the "Orthodox," as the lawful treasurer any longer. Under the direction of the meeting held by the "Orthodox," and claimed by them to be the true Preparative Meeting of the Society of Friends, Hendrickson, as their treasurer, demanded of Shotwell the payment of the interest due upon his bond and mortgage, which he refused to pay him, disclaiming his right to receive it. Upon this, Hendrickson filed a bill against Shotwell to foreclose the mortgage. Shotwell exhibited a bill of interpleader against the two adverse treasurers, in which he set forth their respective claims and pretensions. Hendrickson and Decow put in separate answers, in which the doctrines and claims of both sides were discussed somewhat at length. After the pleadings were completed and depositions taken, the cause went before the court, and was argued at great length. The two justices before whom the cause was heard, after much deliberation recommended to the chancellor to decree in favour of the treasurer, Joseph Hendrickson. For the exposition of the Quaker doctrines, the characteristicks of the two parties, and the grounds upon which the court decreed in favour of the "Orthodox," we refer the reader to the reports of the case, which have been published at length. Each party, of course, maintains its own to be the true, the original, and the fundamental doctrines of the Quaker Society. With what respective merit and justice, we refer the reader to the reports and the evidence.

It has been alleged by some, that Elias Hicks was the cause of all the dissension and controversy. Others deny that he had any thing to do with it, and disclaim the distinction implied in the name "Hicksite." Whatever may be the truth in relation to the matter, it is nevertheless certain, that Elias Hicks has borne a very conspicuous part in the Society of Friends—that he has wielded a very powerful influence, and that his doctrines and preachings have excited a strong opposition on the one side, and attracted a warm support on the other. He was no ordinary man, if we rightly apprehend his character. A fluent speech, a ready pen, a pursuasive and impressive manner, and an interesting physiognomy, united in a person endowed with a strong mind, cannot, as in him, be actively exercised in any community without producing an important sensation.

Elias Hicks was born in Hempstead, Long Island, March 19th, 1748. We know but little of his youth and education, which were probably not of more than common interest. He was married in January 1771, and was acknowledged a member of the Society of Friends about the same period. He first appeared as a minister at the age of twenty-seven. In this capacity, he is said to have been very diligent and successful. In the course of fifty years he travelled extensively through the United States, as a minister, and several times into Canada. In the year 1828, being then eighty years old, he made a visit to New Jersey, Pennsylvania, Maryland, Ohio, and Indiana, much to the satisfaction and surprise of Friends in those parts. Shortly after his return home, his wife died. The summer following, he visited the northern and western parts of the state of New York. He attended the Monthly and Quarterly Meetings in New York frequently after this; and we are told that even at this advanced age, he preached with great clearness and power. On the 14th of February, 1830, just after writing a very long and spirited letter to a western friend, he was taken with a paralysis of the right side, which terminated his life on the 27th of that month.

Mr. Hicks was always a zealous advocate of the African slaves. He abhorred slavery and every thing pertaining to it or arising from it. During his illness, he was observed repeatedly to throw off a portion of his covering. His friends finally asked him why he did so—he articulated "*cotton.*" He would have no product of slave labour about him.

He was tidy and careful about his farm—a very early riser, and always industrious. A friend informs us, that he saw him in his 80th year, coming out of the field on a load of hay at five o'clock in the morning. He possessed this same activity and vigour of mind and body until the time of his last illness.

An incident occurred in the latter part of his life, which furnishes, perhaps, a strong evidence of his prevailing conscientiousness and integrity. An acquaintance of his, who owed him borrowed money, failed. A son-in-law informed Mr. Hicks of the fact, at the same time showing him that he had been made secure. "But how is this?" said Mr. Hicks, "does he not owe thee?" "Yes." "And has he secured thee?" "Yes." "And all his creditors?" "No, he could not do that." "Then he should not have secured thee or me." Whereupon Mr. Hicks immediately directed his debtor to place him upon the same footing with the rest; it not appearing strictly right to him that a distinction should be made between *confidential* and other creditors.

Mr. Hicks died at his residence in Jericho, Long Island. His most important writings are his letters and his journal.

From the Western Monthly Magazine.

SUBSTANCE OF A DISCOURSE ON ELOCUTION.

BY DONALD MACLEOD, A. M.

Delivered before the Western Literary Institute and College of Professional Teachers, at their Fifth Annual Meeting, held in Cincinnati, October, 1835.

The low state of elocution amongst us is universally admitted. It is agreed, on all hands, that the style of speaking prevalent in our legislative and popular assemblies, at the bar, in the pulpit, the chair of professorship, and among the students of all our seminaries of learning, is, so far as respects delivery, faulty in the extreme. In the humbler branch of reading, there are deficiencies quite as flagrant, and much more numerous. The English language is greatly impaired—almost destroyed by the majority of those who employ it; and very few of the rest are accustomed to give to it all the perspicuity, energy, and elegance of which it is susceptible.

Where shall we look for the causes of this corruption? Not, surely, in any insensibility on the part of the mass of our fellow-citizens to the value of good reading and speaking. Delivery is, by no means, a matter of indifference to them. It is the very reverse. It is held in the highest estimation. Let any one, who would satisfy himself of this, listen to the remarks of his friends and neighbours in regard to some distinguished pleader, or preacher, or political orator, who had just before moved or delighted them with his eloquence. For one remark, which would lead an observing man to suppose that their attention had been engaged by the subject-matter—the large or correct views of the speaker—the soundness of his reasoning—or the rhetorical beauties of the composition, he will hear a dozen observations which show that they were chiefly interested by his appearance and manner—by looks, tones, and gestures. This is the case, whether the speaker be a man of genius, or very moderate abilities. Nothing is more unquestionable, than a speech quite faultless in point of composition—combining with excellence of matter, the purest graces, and utmost energy of style—will produce little immediate impression on the audience without a corresponding delivery. On the other hand, persons of the truest taste and most solid erudition, will listen for hours with fixed attention, admiration, and delight, and not unfrequently with conviction, to men possessing an earnest, unaffected, and harmonious elocution, although they have no great recommendation besides. In fact, so much are people in general governed by the externals in oratory, and so essential, therefore, is this branch, that no powers of mind, and no other rhetorical accomplishments, whatever, can fully supply a deficiency in it. The most splendid and powerful passage in the records of ancient or modern eloquence—the most impassioned and beautiful productions of the poets—the masculine vigour of Dryden—the wit of Congreve—the pathos of Otway—the glowing inspiration of Shakspeare himself, unless illustrated and enforced by a suitable elocution, will fall upon the ear spiritless and unsuccessful.

And yet, notwithstanding the high consideration in which this branch appears to be held by the publick, so seldom do we meet with excellence or any great proficiency in it, that it may be said with entire truth, a good delivery is the rarest of all accomplishments. Among the causes of this deficiency, we may justly designate as by far the most productive, the narrow and unphilosophical plans of rhetorical education which have been adopted in our colleges and other seminaries. In some of these no attention whatever is given to delivery—the persons under whose charge the students are placed, thinking it of no value—and being influenced to that opinion by qualifications similar to those which prompted Scaliger to pronounce his absurd diatribe against the usefulness of mathematicks, and Dr. Johnson to underrate the importance of the natural sciences, namely, an overweening vanity in their own pursuits, and shallowness in those which they decry.* In others, some time and attention are given to the subject, but unfortunately, a beginning is made at the wrong end. The student is required to exercise himself occasionally in reciting poetry, or declaiming passages from the orators; but before he has spent an hour in studying the principles of the art, either as to voice or action. And even in this careless and untutored practice, he is left principally to his own guidance; all that is usually insisted upon being the pronunciation of some passage in some manner or other, once or twice during the term. In other institutions, again, the place of a rational and comprehensive scheme of instruction is supplied by a most pernicious system, which can only produce habits of speaking in no way adapted to the character of earnest debate and oratory, and altogether inconsistent with natural effect. The bad effects of these systems may be clearly distinguished in all the succeeding rhetorical pursuits of students who pass through college, and on every occasion when in the discharge of professional, academical, or political duties, they are called upon to speak or read in publick. The majority of them either labour under the most painful constraint and embarrassment, from not having been accustomed to face an audience, or hear the sound of their own voices; or else they have confirmed the habits of incorrect, pompous, and noisy declamation, acquired at school and college, by practice after the manner of their old academical exercises: by attending debating societies and spouting clubs, and there attempting to declaim the glorious eloquence of Chatham and Burke, or enact Hamlet and Macbeth. Alas! they imitate "humanity abominably!"—in daring to give utterance to written spells of genius, before they have bestowed any pains on the mechanical, or intellectual part of elocution—before they have learned to perform on that most potent and expressive of all instruments, the human voice, or even subjected the compositions selected for this idle display, to the close and searching analysis, without which no man ought to presume to read aloud the highly-wrought passages of a great orator or poet. Others there are, possessing a partial and imperfect knowledge of rules, and some of the mechanical resources of the elocutionist—powers of voice and gesture—who deform their reading and speaking, by what they, no doubt, consider highly ornamental action and intonation, but which are such affected and meaningless ornaments, as could only be tolerated by persons of the most sophisticated tastes. You will find this class of persons continually straining after effect. All is done merely for the purpose of displaying their powers: and their looks and attitudes seem to keep up a running commentary on the whole performance, thus:—"Was not that a spirit-stirring note?" "Did I not make a most harmonious cadence there?" "What think you of that majestick sweep of the arm?"—or serve the purpose of a prologue:—"Now I'll rouse your passions—now I'll melt you to tears—now I'll give you peal after peal of lofty and swelling declamation?" Finally, we not unfrequently find all these faults combined in the same individuals. How many there are who have taken no pains about delivery, and yet are accustomed to employ tones and gestures, which it would be impossible for the most unwearied perverse industry, to make more completely the opposite of what nature would suggest, either in her rude or civilized state.

Such being the present condition of this subject, it becomes a very serious question, one worthy of the profound consideration of this most respectable meeting, and of every reflecting man in the community—"Can any system be devised, which will furnish correctives for the prevailing faults in reading and speaking, and enable the student to discharge his duties in the higher walks of oratory with satisfaction and success?" I answer this question in the affirmative; and it gives me great pleasure to have an opportunity of presenting to the college of professional teachers, and to the liberal and enlightened community among whom I hope to spend the remainder of my life, some outlines of what I consider a rational system of instruction in elocution, and of illustrating them by a reference to the method of tuition, I have been accustomed to pursue in my own lecture-room. In doing this, I am perfectly aware I shall meet with some very strong objections. There are two classes of persons, more particularly from whom little favour is expected. The first comprises all those, to whom every species of elementary discipline is an intolerable hardship. They must have a more easy and familiar method, than is consistent with the philosophy of elocution. The present, therefore, will not serve their purpose. They tell you that in conversation men always speak with spirit and energy, just emphasis and expression; and, therefore, that the surest and shortest road to the attainment of a good delivery, is to assume, on every occasion, the conversational manner. "When you read, talk—when you speak, talk!" is their maxim; and they think, they may safely venture on their task of reading and speaking in publick, if they can only throw diffidence and hesitancy to the winds, and utter the spontaneous suggestions of their own minds, or deliver the thoughts and sentiments contained in the book or manuscript before them, with the ease and earnestness that characterize their manner in the social circle. Now it is admitted, that the tones, and looks, and gestures, which accompany spirited colloquial discourse, do approach the desired excellence more nearly, than the publick speaking we generally hear, or the early efforts of the pupil in reading or recitation. But still the colloquial style is deformed by the faults we have hinted at, and for which we are now in search of a corrective. How often is the utterance of the most fluent and animated conversationist, in a great degree, spoiled by indistinct articulation—discordant and inexpressive intonation—a constantly-recurring monotony—and such violent perversion of the vocal elements, as not only destroy all grace and beauty, but hazard even the perspicuity of the expression. The subjects and occasions of familiar discourse, indeed, from their very nature, are apt to give habits of hasty, insipid, and meager enunciation, which cling to us when we go up to act a part in the great scenes of publick business; and constitute some of the worst and most dangerous faults a speaker can possess. A man may display most of the characteristick qualities of earnest conversation, and yet be a poor reader or orator after all.

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* Vide Inaugural Discourse of Thomas Campbell, author of 'Pleasures of Hope.' Glasgow, 1827.

It is undoubtedly true, that persons of very strong and delicate feelings will occasionally exhibit the highest beauties of elocution, merely by giving themselves up to the impulse of sentiment and emotion. But this only proves that genuine feeling, by itself, can accomplish much: and by no means shows that they would produce less effect, if they possessed the skill and resources, which art can bestow. On the other hand, it is equally true and important, that were they able to call in the aid of artificial culture, they might do that always, and with infallible certainty, which nature, to be sure, prompts occasionally, but only in her "rare moments of enthusiasm." Rare, indeed, have been the instances of perfect elocution, which have not been the results of patient, constant, and animated previous exertions. Years of even careless practice may greatly improve the capabilities of the voice, and impart habitual ease and freedom to the attitudes and movements. A man of little aptitude for rhetorical pursuits, may, in this way, become a fluent, unembarrassed speaker; for fluency and self possession are matters almost entirely mechanical, and have little to do with high intellectual or moral endowments. But never can a man be made truly eloquent, by such a process. Attend to the performances of the most of those, who contend for this, as they call it, NATURAL MANNER, and point out, if you can, a single felicity of vocal expression or gesture. The powerful arguments, the apposite reflections, the striking and original imagery may frequently command your admiration, and impress your hearts, in spite of the tones and motions which accompany them. But though the speaker is able to stand before you without constraint or embarrassment, and though his language flows in one continued stream, yet the poor and meager qualities of his voice, his inability to employ the signs of many varieties of thought and emotion, and his absolute incompetency to give to any of them the clearest, most forcible, and agreeable expression, will deprive him of all claim to the attribute of eloquent. As well might he attempt to take a high rank among painters and sculptors, by mere practice, without possessing any knowledge of the principles exemplified in all the immortal productions of the chisel and pencil, as to become eminent in elocution, without studying the established principles and rules of this art. But we have been long enough engaged in combating this idea. They are only the idle and vainly ambitious, who can bring forward such an argument. It is a cloak for their own indolence. They think theirs the easier method; and with great reason; for so far from being difficult is the *talking style* referred to, that any man who chooses to try, and can look an audience in the face without being discomposed, may acquire it with as much rapidity, and as little demand on his intellect, as any other merely mechanical habit.

The other class to whom allusion has been made, comprises persons of the highest respect—although among them, likewise, it is an errour no less common, to turn away from all artificial culture in elocution. They know that nothing great in any branch of human knowledge or improvement was ever done without labour; and they are willing to pay the tax of labour imposed on every important acquisition. But they have found the means offered by teachers of elocution entirely inadequate to accomplish their object. They have reason to believe, that the majority of persons, who have applied themselves to the systematick study of delivery, have failed; or, (worse still,) acquired a formal, unnatural style, infinitely more objectionable than their former faulty manner. They have consequently come to the conclusion, that elocution cannot be taught—that all rules and systems are at the best useless. They have resolved to go on as before—acknowledging their delivery to be extremely defective, but yet holding that with all its faults, it is the best attainable by them, and that the superiority of others is either a gift of nature, or the accidental acquirement of practice.* Nor is there any necessity or room for surprise at this prejudice, when we look at the qualifications of the men, who have come amongst us professing to teach elocution. They have been generally persons of feeble intellect, and unregulated fancy, or at least entirely ignorant of the great principles of the art. The most popular of our instructers, if we may judge by systems and their results, appear to have no idea of delivery but as an exhibition of merely mechanical power, addressed to the eyes and ears of the audience. What ought to be the real design and purpose of the reader and speaker—to address the mind—is altogether forgotten, or made a subordinate subject of assiduity.

It would be hard, however, if the incompetency of the professors of an art, should be allowed to bring the art itself into discredit. And notwithstanding the failure of other systems, I come here to-day to maintain that ELOCUTION CAN BE TAUGHT; that by a more philosophical, close, and vigorous method of tuition than has hitherto found a place in our seminaries, some degree of excellence in this branch may be attained. When I introduce to your notice the system which has been pursued in my lecture-room, I am very far from presuming that it is the best that can be devised. Many alterations and additions may undoubtedly be made with advantage; but however imperfect it may appear, it has been found by experience to serve some of the most valuable purposes of a course of instruction in rhetorical delivery, namely, the correcting of existing faults, and furnishing means, whereby the student of vigorous faculties and generous ambition, may approach perfection in this art. It is believed, gentlemen, that those who have knocked at the doors of your schools and colleges, seeking the means of improvement in this branch, and have sought in vain, may find what they desiderate in this system—a system, which while it requires the student to confine himself, in the first place, to the study of principles and rules—to acquire a mastery over them, before he enters upon the more genial and inviting business of reading and recitation, is yet opposed altogether to quenching the ardour of youthful emulation—a system which, so far from discouraging, actually urges the daring aspirant to oratorical distinction to use his own powers—follow the suggestions of imagination and emotion—and thus, with nature for his "law and impulse,"

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* Whately's Rhetorick, part 4th. chap. 1, sec. 1.

"Snatch a grace beyond the reach of art."

whilst at the same time it impresses upon his mind, that, in spite of occasional exceptions, the great things in elocution have been achieved through intense labour. Let me say to the youthful and ambitious students at present—to the boy-orators—Deplore no longer the absence of means of improvement. If you have marks of improveable dispositions, mentioned by Quinctilian, "Puer mihi ille detur, quem laus excitat, quem gloria juvat, qui victus fleat,"—then only be faithful to yourselves—

"Shun delights and live laborious days,"—

and the facilities which have been supplied by the close observation and indefatigible industry of Walker, Sheridan, and particularly RUSH, will render the acquisition of a good delivery a comparatively easy task.

(To be continued.)

CARRIER PIGEON.

Singular Fact.—A pigeon was recently observed sitting upon a fence, at Flatbush, L. I. The observer approached it, and through seeming fatigue, the bird permitted itself to be taken up. On examination it was found to be a carrier-pigeon, and bore, fastened under one of its wings, a scrap of English paper, containing the London sales of stocks, &c. It is surmised that the bird was sent with that despatch, intended for Antwerp, but that it was either pursued by a bird of prey, or driven out of its course by heavy winds, and alighted on Long Island, after the prodigiously long and fatiguing flight of three thousand miles!

OUR COUNTRY'S CALL.

Raise the heart—raise the hand;
Swear ye for the glorious cause—
Swear by Nature's holy laws,
To defend your Father-land.
By the glory ye inherit—
By the name 'mid men ye bear—
By your country's freedom, swear it—
By the Eternal—this day swear!
Raise the heart—raise the hand;
Fling abroad the starry banner—
Ever live our country's honour;
Ever bloom our native land.

Raise the heart—raise the hand;
Let the earth and heaven hear it;
While the sacred oath we swear it—
Swear to uphold our Father-land!
Wave, thou lofty ensign glorious,
Floating foremost on the field,
While thy spirit hovers o'er us,
None shall tremble—none shall yield.
Raise the heart—raise the hand;
Fling abroad the starry banner—
Ever live our country's honour—
Ever bloom our native land.

Raise the heart—raise the hand;
Raise it to the Father spirit,
To the Lord of Heaven rear it;
Let the soul 'bove earth expand.
Truth unwavering—Faith unshaken,
Sway each action, word, and will—
That which man hath undertaken,
Heaven can alone fulfil.
Raise the heart—raise the hand;
Fling abroad the starry banner—
Ever live our country's honour—
Ever bloom our native land.

THE INDEPENDENCE BELL.

The bell hanging in the steeple of the old State House, in Chestnut street, in this city, which is rung on special occasions, is the one that assembled the people together to hear the Declaration of Independence read, fifty-nine years ago. The metal of which this bell is composed, was imported in the year 1752, in the shape of another bell, which having become injured by an accident at the trial ringing, after its arrival, it became necessary to have it recast. Whether the remarkable inscription upon it was or was not upon the original bell, we have no means of ascertaining, but Watson, in his annals of Philadelphia, expresses the opinion that we are indebted for it to Isaac Norris, Esq., at that time speaker of the colonial assembly, under whose direction the bell was recast. This supposition is possibly correct, for it is hardly probable that the assembly which ordered the bell from England, would have encountered the risk of being suspected of the rebellious intentions which might have been inferred from its terms. The inscription was copied from the twenty-fifth chapter of the book of Leviticus, verse ten, in these words: "*Proclaim liberty throughout all the land, unto all the inhabitants thereof.*"

This prophetick command was literally obeyed by the bell on the 4th of July, 1776, and as it was the first bell in the United States that spoke treason, it was thought prudent to remove it from Philadelphia for safe keeping in 1777, when the British were about to visit Philadelphia, although its weight was two thousand and eighty pounds.

Phil. Gazette.

NEW ENGLAND.

The hills of New England—
How proudly they rise,
In the wildness of grandeur
To blend with the skies!
With their far azure outline,
And tall ancient trees!
New England, my country,
I love thee for these!

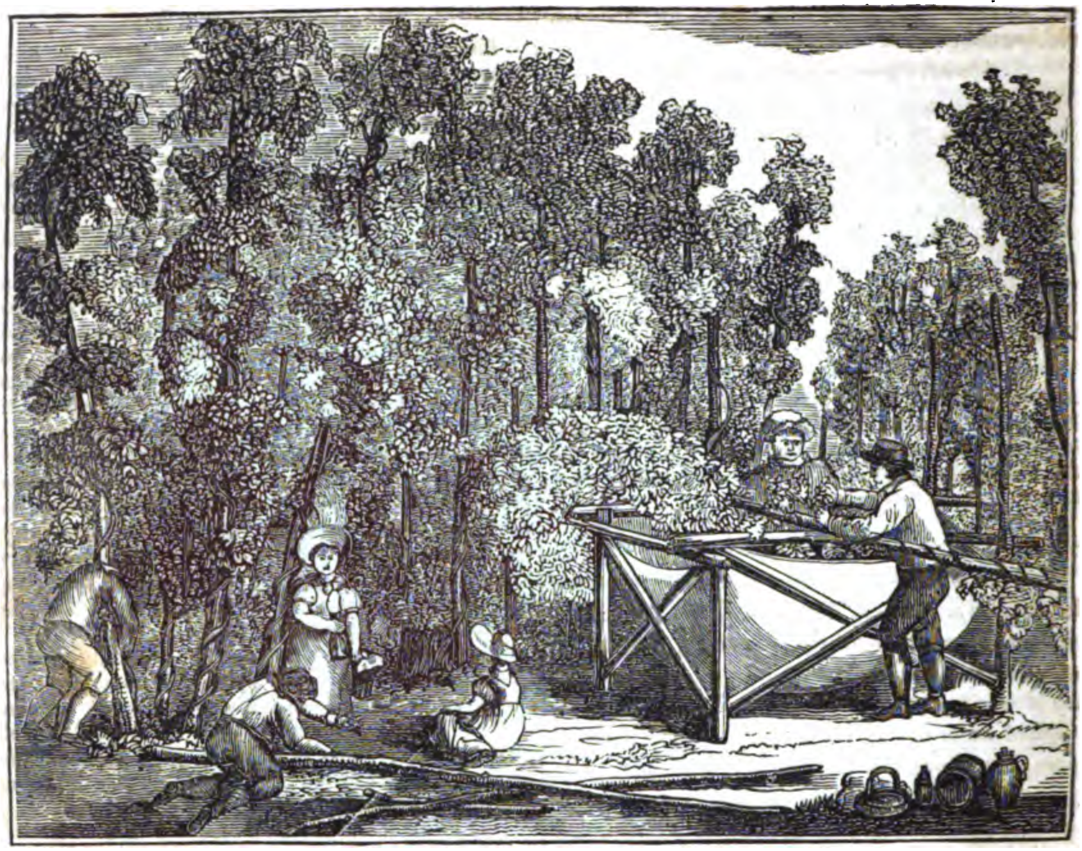
The vales of New England
That cradle her streams;
That smile in their greenness
Like land in our dreams;
All sunny with pleasure,
Embosom'd in ease—
New England, my country,
I love thee for these!

The woods of New England,
Still verdant and high,
Though rock'd by the tempests
Of ages gone by;
Romance dims their arches,
And speaks in the breeze—
New England, my country,
I love thee for these!

The streams of New England,
That roar as they go:
Or seem in their stillness
But dreaming to flow.
O bright glides the sunbeam
Their march to the seas—
New England, my country,
I love thee for these!

God shield thee, New England,
Dear land of my birth!
And thy children that wander
Afar o'er the earth;
Thou'rt my country, wherever
My lot shall be cast—
Take thou to thy bosom
My ashes at last!

Ex. News Letter.



THE HOP GARDEN.

Of all the various pursuits of agriculture, the cultivation of the hop is unquestionably among the most interesting. The whole process, from the formation of the hills, the planting of the *set*, and its growth, to the polling of the plant, its arriving at maturity, and the season of hop-picking, is fraught with interest: and when nature, in due season, clothes the vine with innumerable bunches of yellow flowers, hanging majestically from the pole, then the hop-garden presents a scene rivalling in beauty and variety the vineyards of the south of Europe; and the hop-growers and their friends are accustomed to tread the maze of the hop-garden, to watch the progress of the plant, and to calculate upon the probable recompense for the labour and many anxieties suffered during the season, lest the drought or the wet, the lightning, the wind, the worm, or the thousand other contingencies to which this sensitive plant is liable, should have injured it, or blasted its ripening maturity.

The hop would appear to have been introduced into England at the commencement of the sixteenth century. It was first cultivated there in 1524, in the fifteenth year of Henry VIII. It prospered much, and shortly afterwards Reynolde Scott published a book of black letter recommending its culture; and he complains, in his "**Perfite Platforme of a Hoppe Garden**," that the "Flemmings envye our practice herein, who altogether tende their own profite, seeking to impounde us in ignorance, to cramme us with the wares and fruits of their countrie, and doe anye thing that myght put impediment to our cultivating the hoppe, discommending our soyle and climate, sending us to Flanders for that which we can finde better at home." The eloquence of "Mayster Reynolde Scott," would seem to have produced little effect upon the worthy citizen of London; for soon after we find them petitioning parliament against "two anusancies," Newcastle coals, and hops, alleging, that the latter would spoil the taste of the drink, and endanger the people's health. And accordingly there was a law passed to prevent the use of that "perniciouse weed," the hop. The prejudice against it, however, wore off by degrees. In the course of about sixty years the merits and utility of this plant became more generally known; towards the latter part of the reign of Elizabeth, and at the beginning of the reign of James I. hop-gardens appear to have become numerous, and the hops produced in abundance.

They were introduced into this country by the earliest settlers, and have been cultivated in small quantities ever since. You will now find them growing in the eastern, western, and middle states, and in the eastern states particularly they have become quite an important article of commerce. The largest and most thriving hop-gardens are found in Massachusetts and Connecticut. Particular attention is paid to the culture of hops east of Boston, and also in the neighbourhood of that city.

CULTURE OF THE HOP.

The first thing to be done is to choose a proper piece of ground to prepare for the hop-garden, and in doing this there are two most important considerations—the nature of the soil and the local situation. The soil cannot be *too rich*, and if about three feet under this there be a stratum of rock or chalk, they will prosper better; but a stiff clay or wet land is by no means kindly to them. Some planters consider new land, others, moory land, the best. An eastern or northern aspect should be avoided, and the situation of the hop-garden should be, if possible, either towards the south or west, for the northeast winds are apt to nip the tender shoots in spring and the strong southwest winds often blow down the poles and injure the hops. When, therefore, a sheltered position cannot be found, trees are often planted for that purpose. Having chosen the ground it ought to be prepared the winter previous to planting, by being ploughed up to kill the vermin, or thrown open to the frost to become *mellow*, or malleable previous to being harrowed and receiving the manure. Some new or rich ground requires little or no manure; but if the ground be not so, a rich compost of manure and earth should be laid up in the winter, and then over the ground when ready, in heaps sufficient to put about half a bushel in every hole to plant the hops in. The hills should be about eight feet apart, that the air may freely pass between, for in a close plantation the hops are very subject to what the plantors call the *fire-blast*. If the ground is to be ploughed with horses, after the hills are made, it will be most convenient to place them checkerwise, but if with the breast-plough or spade only, in a quincunx form; the arrangement is usually made by placing a stake where the hills are intended to be. After the manure is filled in, and the ground and holes prepared and covered over, it is now proper to plant the sets or cuttings from old binds. Great care should be taken in choosing the plants: for if they are not all of one kind, they will arrive at maturity at different periods, which will cause a great deal of trouble and expense to the grower. The two best sorts are considered the white and the gray bind; the latter is a large square hop, more hardy, bears more abundantly, and ripens later than the former. There is another white kind of hop, which ripens a week, and sometimes a fortnight, before the common sort. This, like most early plants, is more tender, and bears less in quantity; it, however, has the advantage of being first ready for the market. If three different portions of ground be judiciously planted with these three sorts there will be this convenience, that they can be picked successively as they become ripe. If there be any particular hop from which it is desirable to increase plants, the superfluous binds may be laid down, when the hops are tied, the tops being cut off, and buried under the hill, which will then take root; or when the hops are dressed, cuttings can be saved for almost all these will grow and become good sets the following spring.

Some planters consider the months of October and March the best to plant the sets; but they can rarely be had in October without destroying some plantation: and if the autumn should be wet, they are liable to rot. The best time, therefore, for procuring them is in March, when the hops are cut and dressed. These sets should be about five or six inches long, with three or more joints or buds on them; there should be five sets planted on every hill; one in the middle, and the rest round about, sloping, the tops of all meeting at the centre, even with the surface of the ground: they should be pressed close with the hand, and covered with fine earth, and a stick placed on each side of the hill to secure it.

All that is now necessary is to dig up the ground about the month of May, and so to raise a small hill round the plants as they grow, and to keep the ground free from weeds. By June the young binds grow, and they must be tied into a band or knot, in order to strengthen the roots, for if they are tied up the first year, a few hops will be produced; but the plants will be weakened, and will not produce so many after. In September, if the weather be dry, the compost of manure and earth should be laid on, as then the wheels will not furrow the ground: if it be too wet, you must wait till the weather hardens the ground sufficiently. If the ground requires it, the dung should be spread between the hills, to be dug in towards the winter; the quantity should be about forty loads to the acre—thirty bushels to the load. If you manure it all over with this quantity, once in three years will be sufficient. With poor lands it is, however, customary to manure annually.

DRESSING.

This should be done when the hop-ground is dug, about January or February, and the earth should be gently removed with a spade, that you may the more conveniently cut the stock. If the hops were planted the spring before, they should be dressed in the February following, if the ground is not strong, in dry weather; if strong, the middle of March will do; if liable to produce rank binds, the end of March or the beginning of April may be soon enough. The earth being cleared away by an iron picker so as to lay open the stock to the roots, with a very sharp knife you must cut off all the shoots which grew up the last year, as well as the young suckers, or they will weaken the bind. That part of the stock which was the highest the preceding year, should be cut lower than the others; this will produce strong buds, and the binds will be regular. The dead tops of the hops, planted the year previous, should also be cut off, and the young suckers from the sets, and the stocks should then be covered with fine mould, three or four inches in depth.

POLING.

About the middle of April, of the second year, hops are first poled with short poles, about six feet long, to train the bind; and about the middle of May following, when the shoots have grown to about two feet, they are tied to the poles, by women and children, with rushes.[*] It is, however, only in strong lands that these plants produce sufficient to be worth picking, the first year of poling. In general, the ground is kept clear from weeds, and is manured and dug up again the following spring, and the hills again dressed, as before described; and in the month of April, in the third year, they are ready to receive longer poles, which are generally, now, from ten to fourteen feet long; the poles should be set deep in the ground, to bear the winds, and this is generally done by a round piece of iron, called a "hop-pitcher," having an oval bulb at the end, pointed. Three poles are generally used to each hill; these should be placed as near the hills as possible, with their bending tops turned outwards, to prevent the binds from entangling; and a sufficient space between should be left open towards the south to admit the sun's rays; this is the third year of planting, and first year of obtaining a crop; the following year the hops are poled with much longer poles, it being customary to add about two or three feet in length to the poles, each year, from the time of first poling, until the eighth year, when they are poled with poles varying in length, according to the strength of the soil, from eighteen to twenty-two feet. In very strong ground the bind will sometimes grow from one to two inches and a half in circumference, and even as high as forty feet, but they are never poled higher than twenty-five feet. Great care must be taken not to overpole the ground, for then the stock will be drawn too much, and your crop will be lessened, as the branches which bear the hops, grow very little till the binds have overreached the poles, which they cannot do when the poles are too long. If it be found that some hills have been underpoled, longer poles may be placed near to receive the binds of those that are too short. The hop-bind grows in a geometrically regular progression round the pole, which tapers conically towards the top, having reached which, it then falls over, hanging gracefully down round the pole. The poles, generally, are made of ash, alder, maple, sweet-chestnut, or larch, the turpentine of which prevents vermin and the worm, but maple or aspen are considered the best, on account of their warmth, or, perhaps, because the climbing of the bind is assisted by the roughness of the bark. Ash or willow is more durable; but the sweet-chestnut, which is generally planted on purpose, is the most durable.

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[*] This is called a "young garden."

TYING.

When the binds have grown two or three feet high, and do not attach themselves to the nearest pole, they must be guided to it by the hand, and loosely bound with dried rushes, sufficient to permit them to grow, and turned towards the sun, whose course they will then follow. This should be done until all the poles are furnished with binds; each pole should have two or three; all the sprouts and binds for which there is no occasion, should be plucked off; but, if the grounds be young, they should be laid up together in the middle of the hill. When the binds grow out of reach, and forsake the poles, a stand-ladder is made use of in tying them. At the latter end of May, when the tying process is over, the ground has then its summer dressing; this is done by throwing up some fine earth on each hill; and, about a month after this, the alleys must be hoed with a Dutch hoe, and the hills made up.

HOP-PICKING.

In July the hops begin to blossom, earlier or later according to the season; early in August they *bell;* and when very forward, they arrive at maturity, and are sometimes ripe at the end of August or beginning of September; but generally, they are seldom ready to gather till October, when the hop-picking commences, and continues till November; they are ripe when they change colour; when the seeds begin to look brown, and when they emit a fragrant scent, they should immediately be picked with great expedition. A storm of wind will now do them great injury by breaking the branches, and bruising and discolouring the hops. Hops picked when green and bright, will sell for a third more than those which are discoloured. The first thing done is to fix the bins. Each bin is from eight to ten feet long, three feet six inches wide, and three feet six inches high; it consists of a frame made of two long and two cross-poles, with six upright legs, braced with cross-trees at each end, projecting about two feet above the top. Within this frame is hung a coarse canvass bag, in order to receive the hops; this is divided in the centre by a cross-bar, over which the bag falls, and forms, as it were, two bags. Upon the cross-braces, or trees, projecting above the bag, like a fork, is laid a long pole longitudinally, this is called the "*bin horse*," upon which the poles rest while they are picking. Two men or women, or three boys or girls, may stand on each side of this frame, and pick poles, at a time. It is considered best to begin picking the hops on the east or north side of the ground, if convenient, as this prevents the south-west wind from breaking into the centre of the garden. Having made choice of a spot containing about eleven hills square, the bin should be placed upon the hill in the centre, having five hills each way, and when these are picked, the bin should be removed back, in the same way, through the whole garden.

The bins being made ready, a man called a "*pole-puller*," with a kind of instrument like a sickle with a long handle, cuts the binds round each pole at about three or four feet from the ground; for the cutting of them lower, especially while the hops are green, would occasion a great flowing of the sap and would weaken the root. Having cut the bind, he proceeds to raise the pole by means of an instrument called a "*dog*," which is a strong piece of ash pole, about six feet long, and about nine or ten inches in circumference at the base, tapering to five or six inches; to it is attached, about two feet from the lower end, a piece of iron, about ten inches long, jagged on the inside, and projecting from the haft or handle about five or six inches. The pole-puller clasps the pole with the iron part, rather low down, and resting the lower end on the ground raises the end which he holds, and the teeth of the iron, catching the pole, lifts it completely out of the ground. Some poles weigh, with the hops upon them, nearly a hundred weight; and when deep in the ground require great force; but this simple lever easily raises them. Having raised the pole, he then carries it to the bin, and lays it on the "*horse*," with the hops around it, and the hop-pickers immediately commence picking. Sometimes the hop-pullers will work back in this way, forty or fifty yards before they remove the bins: when they do, it is called a "*remove*."

The hops should be picked as free from leaves as possible; the sample of the hops being considered better in proportion as they are free from leaves and discoloured hops, called "*flyers*," which come from dead branches broken off by the wind, when the hops turn of a brown red colour. The hop-bins are emptied two or three times a day into clean hop-bags, containing thirty or forty bushels, and are immediately carried in carts or wagons to the oast or kiln to be dried; for if they remain long in the bin they are apt to get discoloured. If the weather be hot, no more poles should be drawn than can be picked in an hour, and they should be gathered when dry, and in fine weather, if possible; this will save expense in drying, besides preserving their colour. Hops should never be gathered with the dew on them, as that makes them become mouldy. The crop of hops being picked, care must be taken of the poles for the following year, and the haulm or bind of the hop, being stripped off, they are generally put under a shed; but in extensive grounds, three or six poles are generally set up conically, and wide at the bottom; being fixed firm in the ground with the iron patches, and bound together at the top, the rest of the poles are set about them. These are called stacks, and by these means all the poles in the inside will keep dry, excepting the tops; and the rain running down the outside, the poles suffer no injury, as the wind soon dries them: on the ground, horizontally, they would receive more injury in a week, than in a year piled in this manner.

DRYING.

The hop-oast is generally built square, and made to hold two, four, six, or eight drying kilns, according to the extent of the plantation. Each kiln is built with a brick-work furnace at the bottom, with iron bars, and a door similar to a malt-kiln furnace, and was formerly constructed in a very slight manner, merely for the purpose of using charcoal; but of late, coke, made from seacoal, has come into general use in England, is not one fifth the expense, and answers the purpose equally well, while the sulphurous vapour arising from it adds to the colour of the hops. A square conical chamber is built above the furnace, either of brick-work or of iron, which is best, but more generally with slight timbers, lath and plaster, ascending like an inverted cone, with its base to the floor above, through which there is an opening ten to fourteen feet square; over this, slight rafters are fixed, at about six or seven inches apart: these were formerly made of wood, upon which a hair-cloth was stretched to receive the fresh-gathered hops to be dried; but now they are generally constructed of copper-wire, or copper-plates, pierced full of small holes, and fixed upon iron ribs. This is enclosed by a wooden curb, which consists of four boards, from ten to eighteen inches high, and about an inch and a half or two inches thick, set up edgewise. The whole of this part is called the oast. The hops are spread over this, if dry, about a foot thick, but if green or wet, much thinner. The oast should be warmed before the hops are laid on, and then an even and steady fire must be kept up; it must not be too fierce at first, lest it scorch the hops, nor slackened, but gradually increased, till the hops are dried; for, if slackened, the moisture which the fire has raised will be apt to fall back and discolour them. After laying about nine hours, they must be turned; and in two or three hours more, they may be taken off the oast. When they are dried sufficiently, it is indicated by the brittleness of the stalks, and the easy falling off of the hop leaves. In order to prevent the trouble and expense of turning the hops, the following ingenious and simple plan is, in some places, adopted. A sheet-iron or copper cover is constructed, so as to be raised and lowered at pleasure; when the hops begin to dry, and would burn, the moisture being nearly evaporated, the cover is let down within a foot, or less, of the hops, (like a reverberatory,) which will reflect the heat upon them, so that the top will soon be as dry as the lowermost, and every hop be equally dried.

A small quantity of sulphur is generally used by the hop-drier, strewing it on the furnace, at the end of the operation, for drying each charge. The effect is produced in consequence of the sulphurick acid (caused by the combustion of the sulphur) ascending from the kiln, through the hops, which gives them a very bright appearance, similar to that imparted to straw or leghorn bonnets; there is a penalty for using it, although generally practised; and, if used in moderation, is not considered in any way injurious to the hop, or the ale or porter in which it is used.

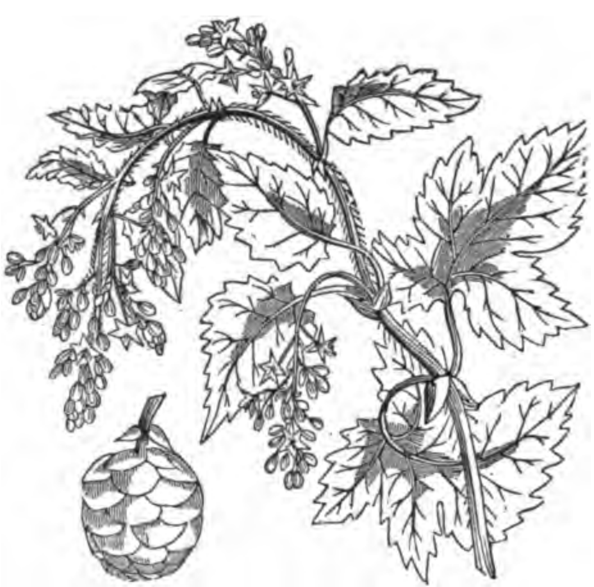
BAGGING AND POCKETING.

After the hops are sufficiently dried, they are removed from the oast, and taken to the bagging-loft where they remain in a heap for a few days, which causes them to become a little damp; this is occasioned by the sulphurick vapours, acquired in drying, absorbing moisture from the atmosphere, which makes them bear treading the better. The common method of bagging is as follows:—The opening of the bag is fixed round and over a hoop, and is then dropped through a circular hole in the floor of the loft, the hoop being a little larger than the opening, and resting on the floor; this will contain about two hundred weight and a half of hops, and consists of four ells and a half of ell-wide cloth; they tie a handful of hops in each lower corner of the bag to hold it by. Into this bag the hops are shovelled; which being filled, a man stands inside treading them down as close as possible—the closer they are packed the better; when full, they undo the fastening of the bag, and let it down to the floor below; the mouth of the bag is then closed up, a handful of hops being tied at each corner, as at the bottom.

Hop-pocketing is performed precisely the same way, only that the pockets contain but half the quantity of the hop-bags, and are made of strong coarse canvass, instead of the article called bagging, which is made on purpose for hops, of a *twine warp and a loose twisted tow hoop*, as large round as a strong cord. Bags are calculated for keeping hops much longer than pockets. Hops, well dried and packed in bags, will keep good several years, but care must be taken to keep them from damp. Hops for exportation, are sometimes packed by means of a powerful press and iron cylinders, by which a bag or pocket of hops can be reduced to one fourth of its usual bulk.

BOTANY OF THE HOP, HUMULUS.

The hop is a genus of the class Monœcia XXI., and of the order, Pentandria V. Its specifick generick character consists of a male flower, calyx pentaphillous, or five-leaved, having no corolla, but anthers, with two pores at the top. Female flower, calyx, an oblique entire scale of the Ament, or one large leaf; corolla none, but two styles, and one side within the calyx coated. The stalk is weak, and climbs spirally round the pole or support, ascending always from the right hand to the left, against



THE HOP.

A. Branch of the Male Hop.
B. A Hop; or catkin of the flowers of the Female Hop.

the sun. The stalk and leaves are rough to the touch; upper leaves heart-shaped, lower ones divided into three lobes, serrated on the edges, and growing in pairs or long foot-stalks, opposite each other; the flowers in loose racemes; the male flower distinct, on branched peduncles; the female on peduncles, in hairs of the form of a strobilus or cone, composed of large imbricated calyces, containing one or two seeds. The scales of the strobilus are ovated, and of a yellow green. In botany there is but one description of hop, "*lupulus*;" but the planters divide it into different species, such as the golden, the Flanders, the red and white ruff, the white, the oval, and the long square garlick; these all differ in colour, shape of their bells, quantity and time of bearing, and ripening. The golden hop brings the highest price in the market; this may perhaps arise from the care with which they are picked hop by hop, without being mixed with leaves.

He that has never known adversity, is but half acquainted with others, or with himself. Constant success shows us but one side of the world; for, as it surrounds us with friends, who will tell us only our merits, so it silences those enemies from whom alone we can learn our defects.

When men of sense approve, the million are sure to follow; to be pleased, is to pay a compliment to their own taste.

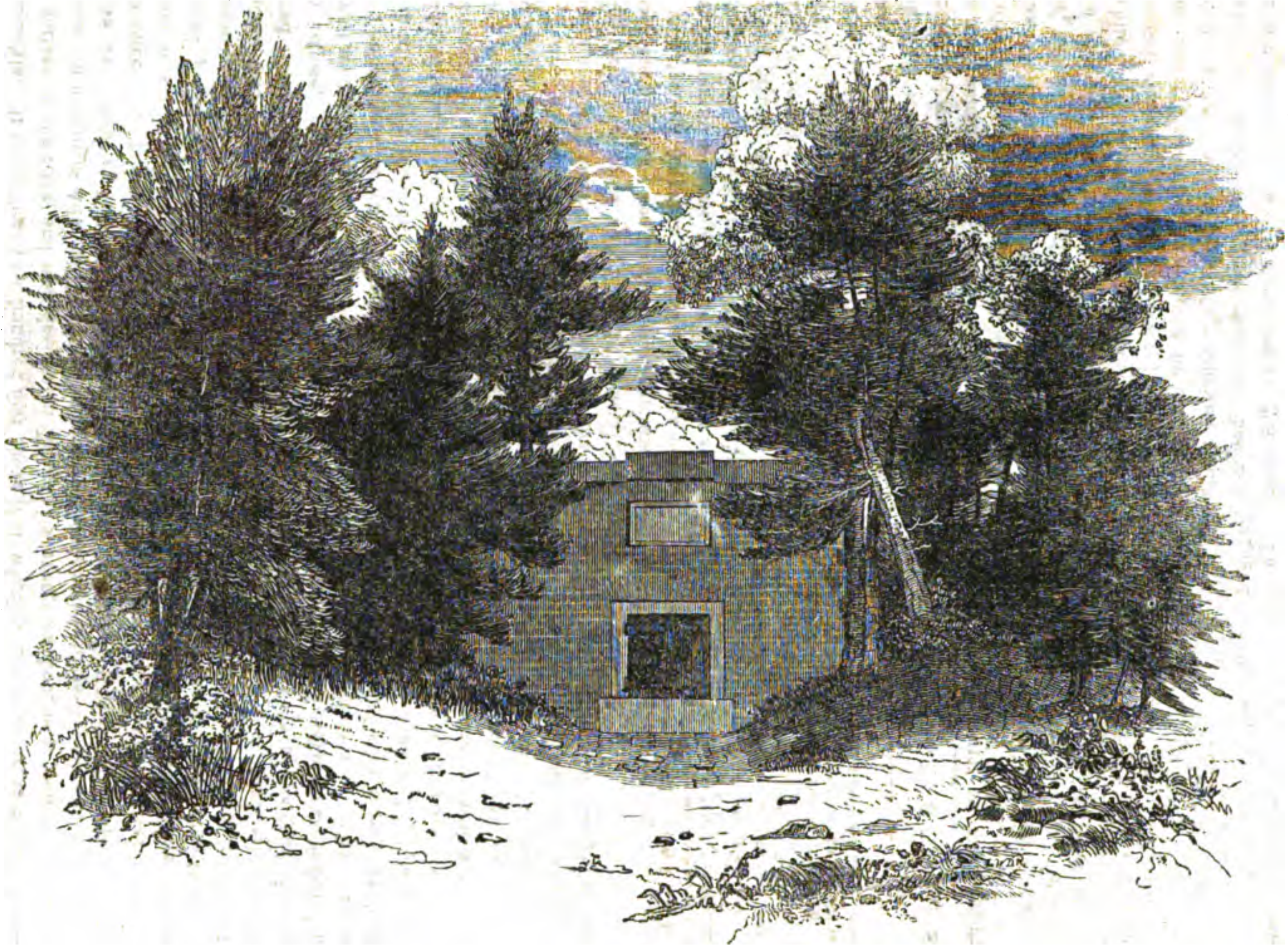
ITEMS OF INTELLIGENCE.

Twenty-eight young men, nearly half of them Americans, were shot at Tampico, under the sentence of a military tribunal, on the 14th of December last, for an attack made by them on that place, in the night of the 15th of November preceding. From their own statement it would appear that they had sailed out of New Orleans under the direction of General Mehia, and were to be landed in Texas—passage free; and that when arrived there they were to be at liberty to take up arms in defence of Texas or not. As the result, however, of an apparently studied design, on the part of Mehia, they were taken in at Tampico. Here they were induced, partly by the authority of Mehia, and partly by necessity, to arm and equip, and march on Tampico, with the view of taking possession of that place. They were, however, defeated and taken prisoners. They appealed to the authorities, protesting their innocence, and declaring that they had been "forced to become the instruments of the infamous ambition of treacherous and unprincipled men." They were shot as individuals who had capitally infringed the Mexican laws. As our government was not responsible for their conduct, so it is not bound to take cognizance of their fate. They went as private citizens, in their individual capacity, and as such they suffered. It was both their fault and their misfortune, and the only exception to be taken to the Mexican proceeding is, that they did not make distinction between those who were leaders in the transaction and those who were unwillingly forced into it, if such they were. They have the merit of having met their fate with fortitude and resignation.

INDIAN HOSTILITIES.

The Seminole Indians have been ravaging a fair portion of East Florida, and attacking and murdering many of the inhabitants with an uncommon degree of barbarity. On the 28th of December last, a party of ten were attacked and five of them slain; among whom was the Indian agent, General Thompson. He received fifteen bullets, and all were scalped and shockingly mangled. On the 31st, a party of two hundred and twenty-seven white troops met a body of about three hundred Indians on the Withlacoochee river, and a sharp battle ensued. About forty Indians were killed, and many wounded; among the whites there were four killed and fifty-nine wounded.

A special message of General Jackson, president of the United States, was transmitted to both houses of Congress, in relation to the French indemnification treaty, on the 10th of January. His language is: "It will be proper and sufficient to retaliate her present refusal to comply with her engagements, by prohibiting the introduction of French products and the entry of French vessels into our ports."



TOMB OF WASHINGTON, MOUNT VERNON

THE TOMB OF WASHINGTON.

Mount Vernon is situated on the western bank of the Potomack river, in Virginia, about fifteen miles below the city of Washington, and eight miles from Alexandria. It rises about two hundred feet above the surface of the river, and was designated Mount Vernon, in honour of Admiral Vernon, who conducted an expedition against the Spaniards, in which Lawrence Washington served. Lawrence Washington was the brother of the president, and the original proprietor of this delightful seat. Mount Vernon subsequently passed into the hands of the general, who resided there with his family when retired from the publick service. There his ashes now repose, together with those of his wife and several relatives of his family.

"The mansion in which Washington resided till his death," says Reynolds, "is a plain edifice of wood, cut in imitation of freestone, two stories high, surmounted by a cupola, and ninety-six feet in length, with a portico in the rear, overlooking the river, extending the whole length of the building. The central part of this edifice was erected by Lawrence Washington, who named it Mount Vernon; the two wings were afterwards added by the general, who caused the ground to be planted and beautified in the most tasteful manner. The house fronts northwest, looking on a beautiful lawn of five or six acres, with a serpentine walk around it, fringed with shrubbery and planted with poplars."

The ancient family-vault, in which Washington's dust first reposed, was situated under the shade of a little grove of forest-trees, a short distance from the mansion-house, and near the brow of the precipitous bank of the river.

Small and unadorned, this humble sepulchre stood in a most romantick spot, and could be distinctly seen by travellers, as they passed in boats and vessels up and down the river. Within two years, however, the ashes of the father of his country have been removed from that place, now designated by a white picket fence, to one near the corner of a beautiful enclosure, where the river is concealed from view. This site was selected by him during life, for a tomb, and is about two hundred yards southwest from the house, and about one hundred and fifty from the bank of the Potomack. "A more romantick and picturesque site for a tomb," says a late writer, "can scarcely be imagined. Between it and the river Potomack is a curtain of forest-trees, covering the steep declivity to the water's edge, breaking the glare of the prospect, and yet affording glimpses of the river, even when the foliage is thickest. The tomb is surrounded by several large native oaks, which are venerable by their years, and which annually strew the sepulchre with autumnal leaves, furnishing the most appropriate drapery for such a place, and giving a still deeper impression to the *memento mori*. Interspersed among the rocks, and overhanging the tomb, is a copse of red-cedar; but whether native or transplanted, is not stated. Its evergreen boughs present a fine contrast to the hoary and leafless branches of the oak; and while the deciduous foliage of the latter indicates the decay of the body, the eternal verdure of the former, furnishes a beautiful emblem of the immortal spirit."

When Lafayette was last in the United States, he visited the tomb of his ancient friend and companion. That visit is thus touchingly described by M. Levasseur:—"As we approached, the door of the tomb was opened Lafayette descended alone into the vault, and a few minutes after he reappeared with his eyes overflowing with tears. He took his son and myself by the hand, and led us into the tomb, where, by a sign, he indicated the coffin of his paternal friend, alongside of which was that of his companion in life, united for ever to him in the grave. We knelt reverently near his coffin, which we respectfully saluted with our lips; rising, we threw ourselves into the arms of Lafayette, and mingled our tears with his."

"Flow gently, Potomack! thou washest away
The sands where he trod, and the turf where he lay
When youth brush'd his cheek with her wing;
Breathe softly, ye wild winds, that circle around
That dearest, and purest, and holiest ground,
Ever press'd by the footprints of spring!
Each breeze be a sigh, and each dewdrop a tear,
Each wave be a whispering monitor near,
To remind the sad shore of his story;
And darker, and softer, and sadder the gloom
Of that evergreen mourner that bends o'er the tomb,
Where Washington sleeps in his glory."—Brainard.

THE FIVE SENSES.

THE SENSE OF SIGHT. No. VI.—DIFFERENCES OF EYES.

All the works of the creation are stamped with the characters of infinity. Each individual of the mighty whole stands as the focus of an ever-varying radiance, the generick type of endless specifick differences. This truth, as we are about to show, is prettily exemplified in the variety of forms and colours which the glorious Creator has bestowed upon the human eye. In travelling from state to state of our native land, these differences must have engaged the attention of the most unobserving.

The varieties which these remarks present to our consideration, may be divided into those which are peculiar to nations, sexes, and trades, and are chiefly those which result from different modifications of colour and form.

I. NATIONAL DIFFERENCES.

1. Colour.—The differences of eyes, as a national distinction, are found to be very closely connected with the colours peculiar to the skin, and may, by a very broad generalization, be thus classed:—

1. Nations composed of people with VERY WHITE skins, have usually BLUE EYES, gradating in some districts into all the varieties of GRAY. Persons with red hair have a greenish tinge upon the iris.

Examples.—Germans, Danes, Swedes, Dutch, British, and Circassians.

2. Nations with WHITE skins have usually BLACK eyes.

Examples.—French, Poles, and generally the inhabitants of lower Western Asia, and Northern Africa.

3. Nations with BROWNISH-WHITE skins usually have DEEP-HAZEL coloured eyes.

Examples.—Southern Europeans and Eastern Asiaticks.

4. Nations with OLIVE skins usually have BROWN or DULL-ORANGE coloured eyes.

Examples.—Hottentots, Mongolians, and the tribes of Upper Asia.

5. Nations with RED or COPPER coloured skins usually have REDDISH-BROWN eyes.

Examples.—Aboriginal Americans.

6. Nations with BROWN skins usually have BLACKISH-BROWN eyes.

Examples.—Malacca, and the islands of the Indian and Pacifick oceans.

7. Nations with BLACK skins always have intensely BLACK eyes.

Examples.—The natives of Central Africa, New Holland, Van Diemen's Land, &c.

2. *Form.*—National differences of form do not admit of being so distinctly classed as those of colour; indeed, so little has been recorded on the subject, that we are only able to state a few brief particulars collected from the statements of travellers, who, it is to be regretted, very commonly pass over the natural history of the countries they visit, and confine their attention to the mouldering walls of perished cities, and the personal oddities of their journeys.

Differences of form in the eye may be reduced to those which depend on size, situation, and the nature of the appendages. 1. *Size.*—The eyes of the temperate regions are usually large, and those of the cold and tropical climates small. The eyes of the European, the Moor, and the Kalmuck, may be taken as examples of the former; and those of the Laplanders, the Esquimaux, the Hindoos, and the Negroes, of the latter. 2. *Situation.*—This character regards the distance of the eyes apart, the obliquity of their position, and the depth of their insertion. The whole of the Mongolian tribes, as the Chinese, Japanese, Tartars, &c., have the eyes placed at a considerable distance asunder, and the space between them very broad and flat. This is a very distinctive mark, and gives an expression of great heaviness and vulgarity to the countenance. The Esquimaux face is similarly characterized. Savage nations have their eyes placed obliquely, and not at right angles, to the nose. This is particularly remarkable in the American Indians, the Bushmen of Southern Africa, and forms a very marked contrast to the horizontal eyes of Italy, or, indeed, to those of any civilized people. The extremes of depth in the insertion of eyes may be found in the Cossacks, Russians, Australians, Moors, Jews, &c., which are very prominent, being placed in shallow orbits, and in the Malays, Hottentots, Dutch, and American Indians, &c., which are deeply seated, and protrude but little. 3. *The nature of the appendages.*—These vary so much, that we can only point to a few examples. The European eyebrow is thick and shaggy; that of the negro, thin and narrow The eyelids of the former, light, and well-drawn asunder, exposing the ball, and giving an air of intelligence and generosity to the expression; those of the latter, large and heavy, particularly the upper one, which generally hangs half over the front of the eyeball, and very much debases the countenance. The inhabitants of snowy countries usually have large lids, which, from habit, are kept nearly closed. The Chinese have short lashes, with long openings to the lids. These, with a thousand little intermediate peculiarities, greatly influence the physiognomical character of nations, and, as we shall presently see, are also of great use in contributing to the formation of perfect vision under the peculiar circumstances of the countries in which they are found.

II. SEXUAL DIFFERENCES.

The eye of the male is, as might be expected, larger and bolder than that of the female, which is small, and delicately formed. The parts connected with the former are also characterized by a greater thickness, as well as by numerous lesser variations. In the male, the eyelids are more muscular, with a harder skin than is possessed by the female, in which latter sex they have less energy, and greater smoothness. This imparts an air of great gentleness and timidity, with a degree of pensiveness, to the female eye, which beautifully distinguishes it from the bold and forcible expression of the same organ in man. The male brow is thicker, with a greater projection than in the female, owing to the increased size of the corrugator* muscles, which are so small in woman that she *frowns with difficulty*; the hairs of the brow are also thicker, coarser, and do not lie close to the skin, as they do in the female. In man, the upper lid is more elevated, so as to appear smaller; the fold is therefore larger, and nearer the eyebrow than in woman. The openings between the eyelids are wider and rounder, the angles at the corners are greater, and the margin of each is broader. The eyelashes are thick, and not so fine. Added to all this, the apparatus for secreting tears is less than in the woman, whose eyes are consequently more humid, and upon whose lids the tear of sensibility more often glitters. It is to this circumstance the mildness and brilliancy of a woman's eye is to be attributed. Man frowns upon his enemies, but his fair partner weeps over their hostility.

III. DIFFERENCES WHICH RESULT FROM THE PRACTICE OF PARTICULAR TRADES.

It may be questioned by some, whether these differences are sufficiently well marked and permanent to enable us to seize on any general characters for their indication. We think a moment's consideration of the effects which certain avocations have upon the bodily frame would immediately remove such an impression; for if it be allowed that a porter grows more robust by the carriage of his loads, the sailor's hand more broad and clenching who sails in rougher seas, or the weaver's limbs more wan and wasted by his sedentary mode of life, we think it must be readily granted that so delicate an organ as the eye will undergo similar changes, under similar affections. But let us point to facts.

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* The corrugator muscles, are those which knit or corrugate the brows.

The eye of a watchmaker, or any minute mechanist, has usually a prying, piercing expression, but seems restless in the performance of long vision. An astronomer, or any one in the habitual use of optical instruments, commonly has one eye strong, and the other weak. This results from the habits such persons acquire of using one and the same eye continually, for their observations; and of directing their whole thoughts at the time to that one avenue of vision. The unused eye in this case becomes, in the course of time, half blind; and the symmetry of expression in the eyes is consequently destroyed. Sailors, from the constant usage of their sight to long distances, acquire a dull, flattened eyeball, and walk in the vicinity of near objects with a vacant apathetick look, which is very remarkable. Sweeps, engineers, pitmen, millers, and others whose professions oblige them to spend much of their time in the midst of dust, have very heavy lids, from the constant practice of keeping them half closed for defence; and a discoloured cornea, occasioned by the irritation of the blood-vessels with dust. Compositors and engravers usually have a full eyeball, with the orbicular muscles well developed. The latter are remarkable for the strength of their eyes in old age, the effect of the constant and equal use to which all their parts are subjected. An industrious use of the eyes contributes much to the durability of their powers. Glassblowers have very protuberant eyes, while those of bakers are sunk and flat. The eyes of a soldier move with great quickness, the result of discipline, which shows itself as much in the private circle, as in the publick ranks. In this way we might multiply examples, but our limits permit us only to add another. The eye of the industrious farmer, refreshed by fields of living green, unsullied by the smoke of cities, free from the demoralizing traits of trading flattery, but too often deadened by ignorance and hereditary prejudice, offers to our view, in favourable cases, the organ in its best state, open, strong-sighted, expressive, and well-defended.

In conclusion, we have only to remark on what appears to be the designs of the all-wise God in causing this great diversity in the forms and colours of the human eye and its appendages. But here we know so little, that in attempting only to conjecture them, we are in danger of "darkening counsel by words without knowledge." The designs of God, like his "commandments," are so "exceeding broad," that in stating them we can scarcely avoid placing limits to his illimitable wisdom, and of giving one reason, where a million really exist. With this acknowledgment, we may venture to believe, that one object to be attained by these differences, was, that one man might be distinguished from another; for had all eyes been alike, one great source of personal identity would have been destroyed. Another object may have been the perfection of human beauty, and the heightening of our enjoyment of it by the addition of interminable variety. The keenest appetite palls under sameness, and we all like our own possessions least—thus hath the Creator stooped to our indulgences. And a third reason, the last we shall mention, may have been, that each eye might be fitted to the temperament and circumstances of the individual. This is evidently true, as it regards nations, and the inhabitants of peculiar districts; and if God has so ordered it in the major case, is it not more than probable that his ordination extends to the minor, and especially where a self-apparent necessity for it exists? We believe that it does. The intense blackness of the iris in a negro, by absorbing the sun's rays, prevents that delicate instrument from being burnt. His eyelids are larger and thicker than the European's, and placed so as to give the eye the appearance of being buried deeply in the skin of the face; the hair of his head and body is every where short and woolly, but the hair of his eyelashes is long and straight, for the obvious purpose, in connexion with the size of the lids, of shading the eye from the otherwise destructive brilliancy of the sun. For these reasons, and a thousand similar ones which we could adduce, we believe that the eyes of every man are especially adapted, by their own peculiarities, to meet his particular exigences, and to augment his joys.

THE INTREPID JURYMAN.

Extracted from a late publication, entitled, "An Excursion from Sidmouth (in Devonshire) to Chester."

BY THE REV. EDMUND BUTCHER.

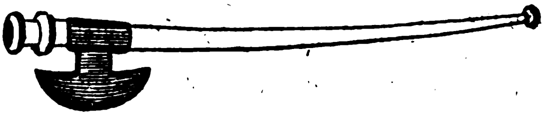
I cannot help congratulating our country upon the inestimable value of trial by jury: I have lately met with a proof of its excellence which ought not to be forgotten.

A judge, on the northwest circuit in Ireland, tried a cause, in which much of the local consequence of a gentleman in the neighbourhood was implicated. It was a landlord's prosecution against one of his tenants, for assault and battery, committed on the person of the prosecutor by the defendant, in rescuing his only child, an innocent and beautiful girl, from personal violation. When the defendant was brought into court, the prosecutor also appeared, and swore to every fact laid down in the indictment. The poor defendant had no lawyer to tell his story—he, however, pleaded his own cause effectually, appealing to the judgment and the heart. The jury found him *not guilty*.

The judge was enraged, and told the jury they must go back and reconsider the matter; adding, he was astonished at their giving such an infamous verdict. The jury bowed, went back, in a quarter of an hour returned, when the foreman, a venerable old man, thus addressed the bench: "My lord, in compliance with your desire, we went back to our room; but as we there found no reason to alter our opinions or our verdict, we return it to you, in the same words as before—*not guilty*. We heard your lordship's reproof; but we do not accept it as properly applying to us. Individually and in our private capacities, it is true, we are insignificant men; we claim nothing out of this box, above the common regard due to our humble, yet honest stations; but, my lord, assembled here as a jury, we cannot be insensible of the great importance of the office we now sustain. We feel glad that we are appointed, as you are, by the law and the constitution, not only to act impartially between the king and his subjects, the offended and the offender, but to form the barrier of the people, against the possible influence, prejudice, or corruption of the bench; to which we do not wish to offer the smallest degree of disrespect, much less of insult; we pay it the respect which one tribunal should pay to another, for the common honour of both. This jury did not accuse the bench of partiality or oppression—no, we looked upon it as the sanctuary of truth and justice; still, my lord, we cannot erase from our minds the records of our school books. By them we were taught that kings and judges are but fallible mortals; and that the seat of justice has been polluted by a Tressilian, a Scroggs, and a Jeffreys." The judge frowned at these words, but the intrepid juror thus proceeded:—" My lord, I am but a poor man, yet I am a freeborn subject and a member of the constitution—nay, I am now higher, for I am one of its representatives; I therefore claim for myself and fellow-jurors, liberty of speech."

The judge here resumed his complacency and the orator continued his address:—" We have nothing to do, my lord, with your private character in this place, it is veiled by your official one: we know you here only in that of a judge, and, as such, we would respect you—you know nothing of us but as a jury; and in that situation, we look to you for reciprocal respect, because we know of no man, however high his titles or his rank, in whom the law of the constitution would warrant an unprovoked insult towards that tribunal, in which they have vested the dearest privileges they possess. We sit here, my lord, sworn to give a verdict according to our consciences, and the best of our judgments, on the evidence before us. We have, in our minds, discharged our duty as honest men. If we have erred, we are accountable, not to your lordship, nor to the king who appointed you: but to a higher power, the KING of kings!"

The bench was dumb, the bar silent; astonishment and applause murmured through the crowd, and the poor man was discharged.

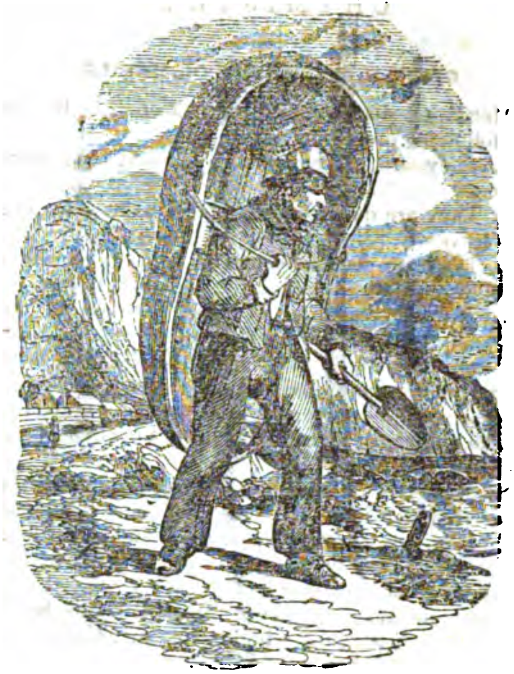


MONTEZUMA'S BATTLE-AXE.

This axe was preserved by the Spanish conquerors, and during the time of Charles V. was deposited in a collection of curiosities at the royal palace of Ambras, near Inspruck. On the invasion by Bonaparte, they were all removed to Vienna, where they now form what is called the *Ambras samlung*, and are worthy of particular attention. The axe is of basalt, of a green colour, with white spots, and bears a resemblance to many which are seen in Ohio and the adjacent parts. The handle is of hard wood, and about three feet in length; at the thicker end is a socket into which the stone was let, and was then secured in its proper place with twine.

Silliman's Journal.

Calumny crosses oceans, scales mountains, and traverses deserts, with greater ease than the Scythian Abaris, and like him rides upon a poisoned arrow.



THE CORACLE.

Coracles, or trucklez, as they are sometimes called, are small boats used by the fishermen in the small lakes and rivers of Scotland. They seem to be a remnant of the primitive inland navigation of the ancient Britons, and are doubtless the same as the portable boats used by the Scots and Picts in crossing the rivers to invade England. They are dissimilar to any thing of the kind we have in use in this country, and are of an oval shape. Like our Indian canoes, however, they are made of raw hide or pitched canvass, stretched over a few slight ribs of wood, or over a wicker-work frame; but they are only capable of holding each one man. They are very easily upset, and it is difficult for a person inexperienced ever to get into one of them and set it afloat, as, unless the weight is exactly in the centre, the coracle rolls over stern uppermost. The fishermen, however, use them with facility, working a paddle with one hand and fishing with the other. When the day is over, the boats are so very light, that the fishermen throw them across their shoulders and carry them home. In case of a storm, they may serve as an excellent hood or umbrella

Love is an alchymist that can transmute poison into food—and a spaniel, that prefers even punishment from one hand, to caresses from another. But it is in love, as in war, we are often more indebted for our success to the weakness of the defence, than to the energy of the attack: for mere idleness has ruined more women than passion, vanity more than idleness, and credulity more than either.

CHYMISTRY.

GENERAL PROPERTIES OF METALS.

Metals are distinguished from all other bodies by the following properties :—

1. They are all conductors of heat and electricity.

2. They are quite opaque, though reduced to very thin leaves.*

3. They are good reflectors of light, exhibiting a peculiar appearance, called the metallick lustre.

4. When combinations of these, with any of the preceding elements, are subjected to the action of the galvanick battery, the metals are separated at the negative pole of the battery. Every substance possessing these properties is regarded as a metal.

The number of metals recognised by chymists is forty-one.

Some metals are *malleable*, or are capable of being hammered out into thin sheets or leaves, such as sheet-iron, lead, and copper, gold and silver-leaf, and tinfoil. Gold possesses this property in a higher degree than any other metal.

Some metals are *ductile*, or capable of being drawn into wires, for which gold, silver, iron, and copper are remarkable.

The relative *weight* of the metals is very different. Gold and platinum are more than nineteen times heavier than water, while potasium is so light as to float upon its surface.

Tenacity or strength. Iron is the most tenacious of all the metals; a wire about the size of a man's finger will support a weight of *fifty thousand pounds*.

Metals have considerable affinity for other bodies; hence they are rarely found *native* or pure. Silver, gold, platinum, copper and a few others are frequently found in a pure state, though most metals are obtained from the earth in the state of an *ore*, which generally consists of the metal combined with oxygen or sulphur, forming an *oxyde* or *sulphuret*. The separation of the metal from the oxygen or sulphur consists in heating the ore in contact with charcoal, which separates the impurities, and exhibits the metal in a pure state. This process is called the *reduction* of the metal.

The metals unite with each other and form a class of compounds called *alloys*, which are exceedingly useful in the arts. Brass is an alloy of copper and zinc; pewter, of tin and lead; and bell-metal an alloy of copper and tin.

Amalgams are combinations of the metals with quicksilver. Some of these are very useful in the arts: Thus, an amalgam of quicksilver and tin is used to cover the backs of looking-glasses; and of quicksilver and gold, for gilding buttons and various other articles.

The number of metals, the existence of which is now admitted by chymists, amounts to forty-one. The following table contains the names of those that have been procured in a state of purity, together with the date at which they were discovered, and the names of the chymists by whom the discovery was made :—

TABLE OF THE DISCOVERY OF METALS.

Gold	Known to the Ancients.	
Silver		
Iron		
Copper		
Mercury		
Lead		
Tin		
Antimony	Described by Basil Valentine,	15th century.
Zinc	Described by Agricola, in	1520
Bismuth	First mentioned by Paracelsus,	16th century.
Arsenick	Brandt, in	1733
Cobalt		
Platinum	Wood, Assay Master, Jamaica,	1741
Nickel	Cronstedt,	1751
Manganese	Ghan and Scheele,	1774
Tungsten	MM. D'Elhuyart,	1781
Tellurium	Müller,	1782
Molybdenum	Heilm,	1782
Uranium	Klaproth,	1789
Titanium	Gregor,	1791
Chromium	Vauquelin,	1797
Columbium	Hatchett,	1802
Palladium	Dr. Wollaston,	1803
Rhodium		
Iridium	Descotils and Smithson Tennant,	1803
Osmium	Smithson Tennant,	1803
Cerium	Hisinger and Berzelius	1804
Potassium	Sir H. Davy,	1807
Sodium		
Barium		
Strontium		
Calcium		
Cadmium	Stromeyer,	1818
Lithium	Arfwedson,	1818
Zerconium	Berzelius,	1824

The discoveries of modern chymistry have materially added to the number of the metals, especially by associating with them a class of bodies which was formerly believed to be of a nature entirely different. The metallick bases of the alkalis and earths, previous to the year 1807, were altogether unknown; and before that date, the list of metals, with few exceptions, included those only which are commonly employed in the arts, and which are hence often called the common metals. In consequence of this increase in number, it is found convenient, for the purpose of description, to arrange them in separate groups; and as the alkalis and earths differ in several respects from the oxydes of other metals, it will be convenient to describe them separately. Turner accordingly divides the metals into the following classes :—

Class I.—Metals, which by oxydation yield alkalis or earths.

Class II.—Metals, the oxydes of which are neither alkalis nor earths.

Class I.—This class includes twelve metals, which may properly be arranged in three orders.

Order 1. Metallick bases of the alkalis. They are three in number; namely,

Potassium, Sodium, Lithium.

These metals have such a powerful attraction for oxygen, that at common temperatures they decompose water at the moment of contact, and are oxydized with disengagement of hydrogen gas. The resulting oxydes are distinguished by their causticity and solubility in water, and by possessing alkaline properties in an eminent degree. They are called *alkalis*, and their metallick bases are sometimes termed *alkaline* or *alkaligenous* metals.

Order 2. Metallick bases of the alkaline earth These are four in number; namely,

Barium, Strontium, Calcium, Magnesium

These metals, like the preceding, decompose water rapidly at common temperatures. The resulting oxydes are called *alkaline earths*; because, while in their appearance they resemble the earths, they are similar to the alkalis in having a strong alkaline reaction with test-paper, and in neutralizing acids. The three first are strongly caustick, and baryta and strontia are soluble in water to a considerable extent.

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* The greenish light seen when goldleaf is held before a candle, is supposed to be owing to the passage of the light through exceedingly small apertures in the metal.

Order 3.. Metallick bases of the earths. These are five in number; namely,

Aluminium,
Glucinium,
Yttrium,
Zirconium.
Thorinum,

The oxydes of these metals are well known as the pure earths. They are white, and of an earthy appearance, in their ordinary state are quite insoluble in water, and do not affect the colour of tumerick or litmus-paper. As salifiable bases, they are inferiour to the alkaline earths. Silica is considered by several chymists as an acid, and its chymical relations appear to justify the opinion.

Class II.—The number of metals included in this class amounts to twenty-eight. They are all capable of uniting with oxygen, and generally in more than one proportion. Their protoxydes have an earthy appearance, but with few exceptions are coloured. They are insoluble in water, and in general do not affect the colour of test-paper. Most of them act as salifiable bases in uniting with acids, and forming salts; but in this respect they are much inferiour to the alkalis and alkaline earths, by which they may be separated from their combinations. Several of these metals are quite capable of forming with oxygen compounds, which possess the characters of acids. The metals in which this property has been noticed are manganese, arsenick, chromium, molybdenum, tungsten, antimony, columbium, titanium, tellurium, and gold.

The metals belonging to the second class may be conveniently arranged in the three following orders:—

Order 1. Metals which decompose water at a red heat. They are five in number; namely,

Manganese,
Iron,
Zinc,
Cadmium.
Tin,

Order 2. Metals which do not decompose water at any temperature, and the oxydes of which are not reduced to the metallick state by the sole action of heat. Of these there are fifteen in number, namely,

Arsenick,
Chromium,
Molybdenum,
Tungsten,
Columbium,
Antimony,
Uranium,
Cerium,
Cobalt,
Nickel,
Bismuth,
Titanium,
Tellurium,
Copper,
Lead.

Order 3. Metals, the oxydes of which are decomposed by a red heat. These are

Mercury,
Silver,
Gold,
Platinum,
Palladium,
Rhodium.
Osium,
Iridum,

BOTANY.

CALYX.

The calyx is the outer set of the *floral envelopes*, when there are more than one verticil of these.

It is composed of two, at least, but usually more leaves, called *sepals*;* these are generally herbaceous; *Ex.*: pink, rose, wallflower, and most flowers.

When the sepals are distinct, or separate from each other, the calyx is said to be *polysepalous*. The outer green covering of the bud of the flax, or rose, is the calyx; and when the flowers open, this is found to consist of five different pieces, or sepals, connected by their base with the peduncle.

In the common poppy and yellow balsam, or touch-me-not, there are only two sepals; there are three to the spiderwort; four to the wallflower and radish; six to the common barberry; and five or ten in most flowers.

But in many plants the sepals are joined together, more or less, by their edges, so as to form one piece in appearance; in this case, the calyx is said to be *monosepalous*; *Ex.*: pink, pea, henbane, Convolvulus, &c.

The sepals are seldom joined for their whole length; the part where they are united is called the *tube*, and the separate ends, the *teeth* or *segments*: such calyces are commonly, though improperly, described as being *cut* into so many segments, or as being toothed.

The calyx is said to be *regular* when all the sepals are alike in size and form; *Ex.*: strawberry, borage, rose, cinquefoil, flax, mint, groundivy, &c.

It is called *irregular* when the sepals are *unlike* in size or form; *Ex.*: thyme, foxglove, violet, &c.

In many plants the calyx has one of its sepals hollowed out into a long thin tube, like a spur, and is hence said to be *spurred*. In geraniums this spur grows to the stalk, so as not to be very perceivable, but it is very distinct in the larkspur, Tropæolum* or Indian-cress, &c.

The calyx is said to be *deciduous*, when it dies off either soon after or immediately on the opening of it, as in the poppy, or before the fruit begins to ripen; as in the Ranunculus, and most flowers.

Polysepalous calyces are *generally* deciduous.

It is said to be *persistent* when it continues to live after the rest of the flower withers, and either encloses, or else forms part of the fruit, as in the common hound's-tongue, rose, apple, and a multitude of others.

Monosepalous calyces are *generally* persistent.

Sometimes the calyx is not herbaceous in texture; in this case it is said to be *coloured*; *Ex.*: Fuchsia, Tropæolum, Ranunculus, monk's-hood, pomegranate, and many others.

Care must be taken not to confound the true calyx, which only belongs to one flower or sexual apparatus, with bracteæ, involucra, spathes, &c., which surround and accompany several.

THE COROLLA.

The next whorl of leaves within the calyx, is called the corolla; this is the part of the flower which is so attractive, from its fragrance and beauty, it being found of every shade and variety of colour, except black; it differs in texture from the calyx and leaves, being more delicate, and the nerves not so thick and strongly marked: this kind of texture is called *petaloid*.

The separate leaves of the corolla are called *petals*, and these, like the sepals of the calyx, are either distinct, when the corolla is said to be *polypetalous*, as in the Ranunculous, wallflower, pink, rose, &c., or are united by their edges, in a greater or less degree, in which case the corolla is called *monopetalous*, as in the Convolvulus, honeysuckle, mullein, bugloss, &c., and the little flowers, or florets, which form the *heads* of composite flowers.

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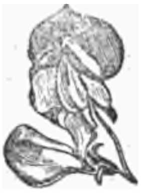
* The word sepal has no derivation, but was invented by botanists to distinguish the parts of the calyx from those of the corolla.

* This plant is commonly, but wrongly, called the Nasturtium, which is the name of the common water-cress.

Like the calyx, the corolla is either *regular* or *irregular;* but this latter admits of a much greater variety of form than the former.

When all the petals are alike in size and form, whatever that may be, or when the corolla appears symmetrical, it is called regular; *Ex.:* corn, cockle, flax, strawberry, St. John's-wort, columbine, bell-flower, &c.

The petals are unequal, or unlike each other, and therefore the corolla is *irregular* in the Tropæolum, Geranium, violent, orchis, mint, &c.



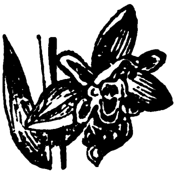
The corolla is called *papilionaceous* (butterfly-like) when it consists of five petals of particular forms, of which the uppermost, or external one, is generally largest, and turned back; this is called the *standard* or *vexillum;* the two next are alike, but differ from the first; they are placed so as to have their faces turned towards each other; they are called the *wings* or *alæ;* the two lowermost are also alike, but differ from the rest; they are generally united by their lower edge, and are so shaped as to form a figure resembling the keel of a boat, and are hence together called the *keel* or *carina*.

This very peculiar corolla, though it varies much in appearance, is always easily recognised; it is the characteristick of a very large order of plants, called *Leguminosæ*, of which the sweet-pea, broom, bean, lupin, vetch, clover, saintfoil, Robinia, sensitive-plant, &c., are examples.

In the corolla of many plants, one or more of the petals are spurred, as in the violet, Orchis, columbine, &c.

Other forms of irregular polypetalous corollas are too numerous to admit of description, and are simply called irregular; of these, our own wild flowers affords examples, in the monk's-hood, yellow-balsam, larkspur, Polygala, fumitory, and others.

Of foreign plants, the varieties of form are endless, as may be seen in the Schizanthus, Rhinanthes, Lopezia, Strelitzia, Cactus, Amphilochia, &c.



The flower of one tribe of plants, the Orchideæ, requires notice from its peculiarity; the calyx and corolla consist of three pieces each, and one of those forming the latter, differs very much in size and form from the other two; it is called the *labellum*, (or little lip,) and is often spurred.

In many species this resembles an insect, and hence they have received the name of *bee*, fly, spider, butterfly, frog, lizard, orchises; the whole tribe is very remarkable on many accounts.

The lower part of the single petal of a corolla by which it is fixed to the receptacle, is called the *claw;* it represents the stalk of the leaf; the broad expanded part, answering to the lamina, is called the *limb*. In the rose, the claw is very short; in the pink, it is very long. The margin of the petal is smooth in the Ranunculus, strawberry, &c.; crenated in the pink, flax; fringed with hairs in the rue, &c.; cut or notched in mignonette, or Reseda; divided nearly into two lobes in chickweed and stitchwort.

Each petal of the common bog-bean has a fringe, or beard, on the limb, which gives a very singular appearance to this beautiful flower.

It must be noticed, that the number of petals, as well as sepals, is commonly the same in the same tribes of plants.

The corolla of the enchanters' nightshade has two petals; the water-plantain, three; Chelidonium and poppy, four.

There is one very large order of plants which have four petals, arranged so as to look like a cross; and are hence called Cruciferæ, "cross-bearing" The radish, charlock, mustard, cabbage, lady's-smock, wallflower, stock, &c., are cruciferous plants.

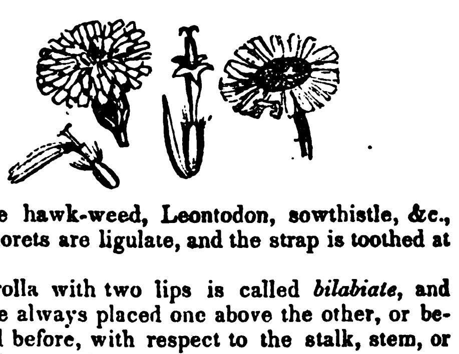
In most plants, however, the number of petals is five or ten, as the wildrose, soapwort, flax, hemlock, and numberless others.

Monopetalous corollas are either *regular*, produced by the union of equal petals; or *irregular*, composed of unequal petals. The part formed by the united margins, is called the *tube;* and the part consisting of the distinct portions of the petals, is called the *limb*.

In the nightshade, and Cyclamen, the limb is turned back. In the periwinkle, oleander, &c., the limb appears twisted.

The projecting parts of the limb of an irregular corolla, are called *lips*. The Acanthus and many others have but one lip. When one lip is very long and narrow compared to the length of the tube, the corolla is called *ligulate*, or strap-shaped.

The outer part of the *heads* of many composite flowers is formed of the ligulate corollas of the exteriour florets; and these are commonly white, blue, or yellow, as in the daisy, Aster, sunflower, &c.; this part of the head is called the *ray*, the central part is composed of florets, with regular corollas, and is commonly yellow, and is called the *disk*.



In the hawk-weed, Leontodon, sowthistle, &c., all the florets are ligulate, and the strap is toothed at the end.

A corolla with two lips is called *bilabiate*, and these are always placed one above the other, or behind and before, with respect to the stalk, stem, or axis, and never right and left.

When the two lips present an appearance like the mouth of an animal, the corolla is called *ringent*.

There is a large tribe of plants called Labiatæ, which have irregular monopetalous corollas, and these generally *bilabiate* and *ringent*, of which the splendid salvia, deadnettle, Monarda, mint, &c., are examples.

When the mouth of the tube is partly or entirely closed by the lower lip, the corolla is sometimes called *personate;* as the snapdragon, cow-wheat, toadflax, rattle, &c.

The lips of monopetalous corollas are cut, notched, or lobed in various modes, which are characters of different species of plants.

The upper lip is often vaulted, or resembles a helmet, as in the common scull-cap, slough-heal, eyebright, &c.

In the common groundivy, the upper lip is *bifid*, the lower, *trifid*, or three-cleft.

In the common toadflax, which grows on old walls, the Linaria, so frequent in hedges, and the snapdragon, the lower lip is spurred, and the whole flower is very curiously formed, something like a frog or tadpole.

In the Calceolaria, a foreign plant common in our gardens, the lower lip is shaped like a little bag, with a narrow mouth; a similar form is found in a rare and beautiful English plant of the orchis tribe, called lady's-slipper: (Cypripedium calceolus.)

The petals of all corollas are placed alternately with the sepals of the calyx; that is, the centre of a petal or a sepal is opposite the division between two sepals or petals; this is the result of the law by which all leaves are developed alternately round an axis; and never two adjoining leaves immediately over each other.

When this is not the case, but the petals are opposite the sepals, an intermediate whorl of leaves is considered to have been abortive, or to have remained undeveloped.

In many plants, there is only one whorl of leaves round the sexual apparatus, or only one floral envelope; this is considered as a calyx, whatever may be its colour or texture. It is often called by botanists, a *perianth;* it resembles a corolla in the tulip, &c.

The flower of the common wild corn-poppy, must not be considered as a perianth, it being strictly a corolla, the calyx which is seen in the bud having fallen when it opened.

In the star of Bethlehem, which has a single perianth, the outside of it is herbaceous like the calyx, and the inside is petaloid like a corolla; showing the gradation from the leafy to the more delicate texture; the same may be seen in many other flowers.

In the grasses, and plants resembling them, the floral envelopes are not calyx and corolla, but bracteæ. The two outer ones are called *glumes*, the two inner *paleæ*, and two within these, at the base of the seed-vessel, *scales*.

They are membranous or chaffy in texture, yet it is not on this account that they rank as bracteæ; but because they are in most cases not developed in *verticils*, but *alternately* on the axis of inflorescence.

The manner in which the calyx and corolla are folded before the flower opens, is called the *æstivation* of the plant, and is important to be observed; it is to the flower-bud what the *vernation* is to the leaf-bud.

The size of the flower, like that of the leaves, does not bear any regular proportion to that of the plant. In South America, there is a climbing plant, the flowers of which are four feet in circumference, and the Indian children put them on their heads like hats.

As examples of other large flowers the genera Datura, Aristolochia, Nelumbium, and those of the order Liliaceæ may be mentioned for herbaceous plants; and magnolia, Lecythis, Berthollecia, and Gustavia, for timber-trees.

The common sunflower, it must be remembered, is not a single flower, but a collection of many hundreds.

THE WAGONER.

I've often thought, if I were asked
Whose lot I evied most—
What one I thought most lightly tasked
Of man's unnumbered host-
I'd say, I'd be a mountain boy,
And drive a noble team. Wo, hoy
Wo, hoy! I'd cry,
And lightly fly
Into my saddle-seat;
My rein I'd slack—
My whip I'd crack—
What musick is so sweet?

Six blacks I'd drive, of ample chest,
All carrying high the head;
All harness'd tight, and gayly dressed
In winkers tipp'd with red—
Oh yes, I'd be a mountain boy,
And such a team I'd drive. Wo, hoy!
Wo, hoy! I'd cry,
The lint should fly—
Wo, hoy! you Dobbin! Ball!
Their feet should ring,
And I would sing,
I'd sing my fal de rol.

My bells would tingle, tingle ling,
Beneath each bearskin cap,
And as I saw them swing and swing,
I'd be the merriest chap—
Yes, then I'd be a mountain boy
And drive a jingling team. Wo, hoy!
Wo, hoy! I'd cry—
My words should fly,
Each horse would prick his ear;
With tighten'd chain
My lumbering wain
Would move in its career.

The golden sparks, you'd see them spring
Beneath my horses' tread;
Each tail I'd braid it up with string
Of blue, or flaunting red;
So does, you know, the mountain boy
Who drives a dashing team. Wo, hoy!
Wo, hoy! I'd cry—
Each horse's eye
With fire would seem to burn;
With lifted head
And nostril spread
They'd seem the earth to spurn.

They'd champ the bit, and fling the foam
As on they dragg'd my load;
And I would think of distant home,
And whistle on the road—
Oh, would I were a mountain boy—
I'd drive a six-horse team. Wo, hoy!
Wo, hoy! I'd cry—
Now, by yon sky,
I'd sooner drive those steeds
Than win renown,
Or wear a crown
Won by victorious deeds.

For crowns oft press the languid head,
And health the wearer shuns,
And victory, trampling on the dead,
May do for Goths and Huns—
Seek them who will, they have no joys
For mountain lads, and wagon boys.

South. Lit. Messenger.

A STATISTICAL VIEW OF MEXICO.

The United States of Mexico formed their constitution in 1824, on the plan of our federal union.—The deviations were few and inconsiderable; nineteen states and four territories formed the confederation. A president was to be elected every four years, and could not be re-elected. A senate of two members from each state, and a deputy for each 80,000 population, formed the congress.

According to that constitution, every man at eighteen years of age became a voter; no other qualification was required.

Indians and Mestizoes, Negroes and Mulattoes, were equally free citizens and voters.

The population of Mexico is at present about 8,000,000; In 1794, it was 5,000,000; in 1806 it was 5,500,000; in 1825, it was 6,850,000; this population is divided as follows:—

1. Indians, 4,000,000.
2. Mestizoes, that is, descendants of Indians and Spanish, 2,000,000.
3. Creoles, Spanish descent, born in Mexico, 1,200,000.
4. Zamboes, Indian and Negro descent, and Mulattoes, 600,000.
5. Negroes, 100,000.
6. Guachupins, or natives of Spain, 10,000.
7. Estrangeroes, or strangers, American, English, French, Italian, &c. 15,000.

By the relative population, we perceive that Indians and Mestizoes form the bulk of the nation, and with equal privileges are sure to rule it at a future time.

They are at present, however, regarded with extreme contempt, and are, by the whites, opprobriously denominated irrational. The number of Indians remain nearly the same as when first discovered by the Spaniards, three centuries ago, and their manners and religion have been little affected by their white intruders.

The land in Mexico is generally much superiour to that of the United States. Almost all the productions of other climes grow there in rich luxuriance.

The produce of maize is wonderful; an acre has been known to produce 200 bushels, and some stems are twenty feet high, with five or six large ears.

Wheat grows well only on the table-land, but there it commonly yields twenty-five to one. In the irrigated lands of Mexico it has even yielded fifty to one, while in Europe only ten or twelve to one is considered the average production; and the best lands in Kentucky yield only twenty-two to one.

To produce 1,000,000 pounds of sugar, only one hundred and fifty labourers are required, while three hundred are requisite in Cuba and Louisiana.

The production of coffee is still easier in Mexico; twenty men can attend 200,000 trees, which, on an average, produce 500,000 pounds.

Cotton also, of a quality far superiour to ours, can be purchased in many parts of Mexico, in greater quantities by one third, than can be obtained from the best lands in Louisiana.

The silver mines in Mexico are perhaps inexhaustible; $3,000,000,000 of silver have been drawn from them during three hundred years past, averaging $10,000,000 per annum.

The first English mining company was established 1823; there are now ten; English, seven; North American, two; German, one. The business, however, has been unprofitable.

The great source of wealth in Mexico, is her eminently productive soil. All the productions of southern Europe abound there in the greatest state of luxuriance and perfection.

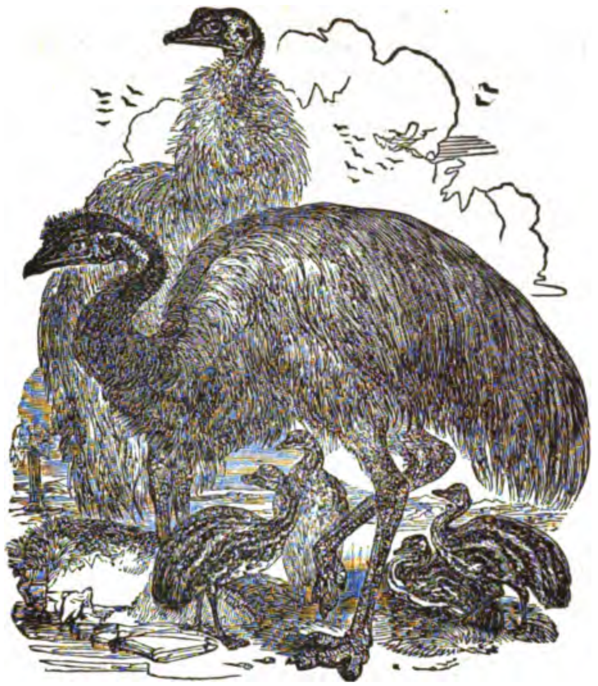
Horses, cattle, sheep, &c., of the finest quality, can be raised at a very trifling expense; the climate being remarkably congenial to their nature. The expense of winter-feeding is avoided, there being no winter there; horses of the best quality can be obtained for fifteen to twenty dollars per head.

The Mexicans have 1,000,000,000 acres of good land to be sold to colonists on six years' credit, at a few cents per acre. Any poor man, therefore, without a cent in his pocket, can purchase his thousands of acres of the very best land in the world, and from the productions of that land, if he be industrious, at the expiration of six years, find his payments all made, and himself independently rich.

Agricultural labour can be obtained throughout Mexico at the average rate of twenty-five cents per day. These low rates operate eminently to the advantage of the enterprising agriculturist; but the consequence is, nine tenths of the natives for ever remain in the most abject poverty and *servitude*.—Like the ancient Israelites, they *sell themselves to* pay their debts, a small debt, of a few dollars, often forcing them into a servitude, from which, in consequence of the high price of clothing, and the low rates of labour, they are never able to extricate themselves. Mechanical labour is mostly performed by foreigners at from two to four dollars per day. Soldiers of infantry have one dollar twenty-five cents per day, and of cavalry two dollars, but they have no rations allowed them; they must therefore clothe and feed themselves, the government furnishing nothing but arms and ammunition. The pay, however, is always in arrears and very difficult to collect. They seldom receive any thing but clothing, charged to them at an extravagant rate, and that only when reduced to the last extremity. As to their food, they are often compelled to borrow, beg or levy it by military contributions. The Mexican forces are at this time in a very disorganized and turbulent condition, reduced to rags and beggary, without resources, their pay several months in arrears, and the national treasury exhausted. Such is the nation with whom the brave Texans are at war, and such the country they possess.

There is a hardihood of effrontery, which will, under many circumstances, supply the place of courage, as impudence has sometimes passed current for wit. Wilkes had much of the first, and Mirabeau of the second. He received challenge after challenge, but unlike Wilkes he accepted none of them, and contented himself with merely noting down the names of the parties in his pocketbook it is not fair, he would say, that a man of talent like myself should be exposed to blockheads like these. It would seem that he had argued himself into the same kind of self-importance with Rousseau, who came to this very disinterested conclusion, that it was incumbent upon him to take the utmost possible care of Jean Jacques for the good of society.

NATURAL HISTORY.



THE EMEU.

Dromaius Novæ Hollandiæ.—Vieill.

In the vocabulary of the early Portuguese navigators, the name of emeu was applied to a gigantick bird of the ostrich family, inhabiting the peninsula of Malacca and the great chain of islands to the south and east. This denomination has, however, been long superseded by that of cassowary, derived from its native Malayan appellation. On the other hand, the bird now before us was named by naturalists, on its first discovery, the New Holland cassowary, to indicate its close affinity to the Asiatick species. But the colonists of New South Wales having adopted for the Australian bird the name of emeu, now no longer otherwise appropriated, and naturalists in general having of late years sanctioned this transfer of an abandoned title, there can be no objection to its retention, and no risk of any future confusion in the synonymy arising from the change.

The characters of this genus, which may now be regarded as firmly established, are as follows:—It has a straight bill, very much depressed towards the sides, slightly keeled along its middle, and rounded at the point; large nostrils, covered by a membrane and opening above on the middle of the bill; a head unsurmounted by a bony crest, and covered with feathers up to a certain age; a naked throat without wattles; powerful legs of considerable length, fleshy and feathered down to the joint, naked and reticulated below it; three toes directed forwards, the two lateral ones equal in length, and the posterior wholly wanting; the claws of all the toes nearly equal; and no true quill-feathers either to the wings or tail. It is consequently distinguished from the African ostrich by the number of its toes; from it and the rhea by the trifling development of its wings, and the total want of plumage to the wings and tail; and from the cassowary by the absence of crest, wattles, and quills, the depression of its bill, the position of its nostrils, and the equality of its claws.

In size and bulk the emeu is exceeded by the African ostrich alone. It is stated by travellers to attain a height of more than seven feet, and its average measurement in captivity may be estimated at between five and six. In form, it closely resembles the ostrich, but is lower on the legs, shorter in the neck, and of a more thickset and clumsy make. At a distance its feathers have more of the appearance of hair than of plumage, their barbs being all loose and separate. As in the other ostriches, they take their origin by pairs from the same shaft. Their general colour is a dull-brown, mottled with dirty gray, the latter prevailing more particularly on the under surface of the bird. On the head and neck they become gradually shorter, assume still more completely the appearance of hairs, are so thinly scattered over the forepart of the throat and around the ears, that the skin, which is of a purplish hue, is distinctly visible. This appearance is most remarkable in the older birds, in which these parts are left nearly bare. The wings are so extremely small as to be quite invisible when applied to the surface of the body. They are clothed with feathers exactly similar to those of the back, which, it should be observed, divide as it were from a middle line, and fall gracefully over on either side. The colour of the bill and legs is of a dusky-black; and that of the iris dull-brown.

These birds appear to be widely spread over the southern part of the continent of New Holland and the neighbouring islands; but we are not aware that they have been hitherto discovered in its tropical regions. They were formerly very abundant in the neighbourhood of Botany bay and Port Jackson, but have been of late years compelled by the increasing numbers of the settlers to seek shelter in the interiour. On the south coast they have been met with in great plenty, at Port Phillip by Captain Flinders, and at King George's sound by the same officer and the naturalists of the expedition under D'Entrecasteaux. They seem also to be extremely numerous in the adjacent islands, especially in Kangaroo island, where they were found in the greatest abundance by both Flinders and Peron; and in King's island, where the distinguished naturalist last named and his companions were fortunately enabled, by the kindness of some English seal-hunters, to subsist, chiefly upon emeu's flesh, for several days while temporarily deserted by their captain. According to the late accounts from Swan river they have also been observed on that part of the west coast on which the new settlement is situated.

The emeu was first described and figured, under the name of the New Holland cassowary, in Governour Phillip's Voyage to Botany bay, published in 1789. In its manners, it bears a close resemblance to the ostrich, as might be expected from their near relationship. Its food appears to be wholly vegetable, consisting chiefly of fruits, roots, and herbage; and it is consequently, notwithstanding its great strength, perfectly inoffensive. The length of its legs, and the muscularity of its thighs, enable it to run with great swiftness; and, as it is exceedingly shy, it is not easily overtaken, or brought within gunshot. Captain Currie, in Mr. Barron Field's Memoirs on New South Wales, states that it affords "excellent coursing, equalling, if not surpassing, the same sport with the hare in England." And Mr. Cunningham, in his amusing work entitled Two Years in New South Wales, gives a curious account of the manner in which it is usually coursed by the dogs. The latter gentleman states that dogs will seldom attack it, both on account of some peculiar odour in its flesh, which they dislike, and because the injuries which it inflicts upon them, by striking out with its feet, are frequently very severe. "The settlers even assert," he says, "that they (the emeus) will break the small bone of a man's leg by this sort of kick; which to avoid, the well-trained dogs run up abreast, and make a sudden spring at their neck, whereby they are quickly despatched."

But although dogs in general may be reluctant to attack the emeu, this is by no means the case with those which are specially trained for the purpose. M. Peron assures us that the English seal-fishers on King's island, in Bass's strait, had with them dogs which were taught to go alone into the woods in quest of kangaroos and emeus, and rarely failed to destroy several of these animals every day. When the chase was at an end, they returned to their masters' dwelling, made known by signs the success of their expedition, and conducted the hunters to the spot where the quarry was deposited. It was thus that those adventurous traders were enabled to supply themselves with provisions, even while they devoted nearly the whole of their time to the commercial pursuits in which they were engaged. This statement, M. Peron assures us, does not depend on the mere assertions of the fishermen themselves, for he had himself witnessed the fact. From his account of the dogs it does not appear whether they were of the native Australian breed. It is more probable that they were English hounds; and the name of one of them, Spot, adds some confirmation to this conjecture, for we are not aware that the pure New Holland dog has ever been found spotted. In either case, the account may be quoted as a surprising instance of animal docility, which would be only the more striking if exhibited by the less sagacious breed.

If we are to credit the report of the same author, the flesh of the emeu is "truly exquisite, and intermediate, as it were, between that of a turkey and a sucking-pig." But some allowance must be made for the circumstances in which he first partook of it, when he and his companions, abandoned by their captain, and without any means of procuring subsistence, had no other prospect than that of perishing by starvation, until relieved by the generosity of the fishermen. The English colonists do not appear to have quite so high an opinion of its merits; they compare it to beef, which it resembles, according to Mr. Cunningham, "both in appearance and taste, and is good and sweet eating: nothing indeed can be more delicate than the flesh of the young ones. There is but little," he says, "fit for culinary use upon any part of the emeu, except the hind-quarters, which are of such dimensions that the shouldering of the two hindlegs homewards, for a mile distance, once proved to me as tiresome a task as I ever recollect to have encountered in the colony." Their eggs are held in much estimation, and, according to the same authority, the natives almost live upon them during the hatching season. They are as large as those of an ostrich, with equally thick shells, coloured of a beautiful dark-green, and are usually six or seven in number; but we have no information as to the manner in which the wild birds form their nest. It probably consists, like that of other ostriches, of a mere cavity scooped in the earth. They seem to pair together with tolerable constancy, and the male bird, as in some other monogamous races, sits and hatches the young.

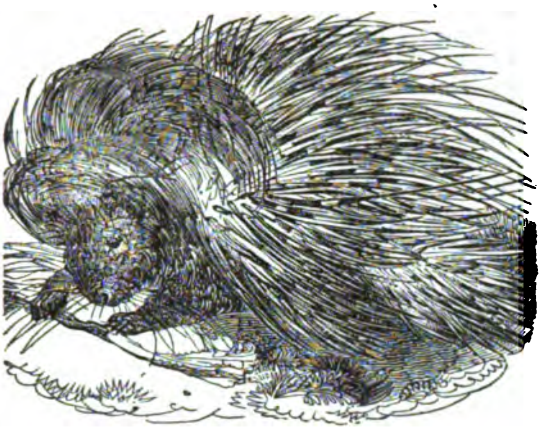
In captivity, the emeus are perfectly tame, and speedily become domesticated. They have been bred in England without difficulty in various collections. A very fine pair are exhibited in the New York Zoological Institute.

THE AFRICAN PORCUPINE.

Hystrix cristata.—Linn.

The animals of the Rodent division, consisting chiefly of "rats and mice and such small deer," have, indeed, with some few exceptions, so little of interest for the mere casual visiter of an exhibition, that it is rarely that they are sought after unless by the scientifick collector. They are at once distinguished from the carnivora by the total absence of canine teeth; and have uniformly two incisors in each jaw, projecting forwards, and generally of considerable size, separated from a variable number of grinders by a vacant space.

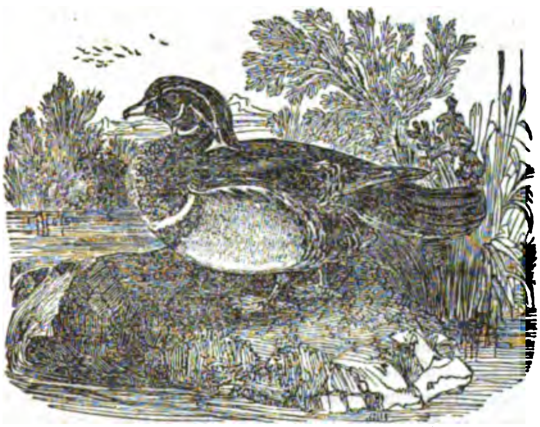
From the other animals of the order, the porcupines are so readily distinguished by the long and pointed spines with which their body is armed, that it is unnecessary to dwell on their generick charac-



THE AFRICAN PORCUPINE.

ters. The common porcupine, when fully grown, as in the remarkably fine specimen figured above, measures more than two feet from the tip of the nose to the origin of the tail. The spines, which are supported by a slender pedicle, thickly clothe the upper and posterior parts of the body, the largest being more than a foot in length; they are regularly surrounded by alternate rings of black and white. The head and neck are crested with long, bristly, black hairs, forming a kind of mane, and all the rest of the body is covered with short black hair.

The porcupine is a native of Africa and the south of Europe; he chooses for his abode the most arid and solitary situations, and passes the daytime secluded in the burrows which he digs for his habitation, quitting them only at night to provide his subsistence, which consists entirely of vegetable substances. He is a remarkably timid animal, and never makes use of his formidable weapons except in self-defence; if alarmed, his spines immediately become erected, and wo be to the enemy who should dare to attack him open-mouthed when in that posture.



THE SUMMER DUCK.

Anas sponsa.—Linn.

The American summer duck, one of the most beautiful birds of its family, is considerably smaller than the domestick species, its total length being about nineteen inches, and the expanse of its wing less than two feet and a half. In the male, the upper part of the head is of a deep metallick green, with the feathers of the dependent crest terminating in a rich violet. A line of pure white passes in an elegant curve from the base of the upper mandible above the eye, and a second extends beneath and parallel to the first from immediately behind the eye. The cheeks and sides of the neck at its upper part are violet; and the entire front of the latter, with a collar round its lower part, and two processes like the horns of a crescent bounding the cheeks behind, white. The breast is deep brown, marked with triangular spots of white, which are very small anteriorly, but increase in size towards the abdomen, where they spread into the general white of that part. A broad white crescent, followed by another of deep black, bounds the posterior part of the breast on either side. The back and tail are dusky, with a metallick gloss of green; the primary quill-feathers of the wings dusky, with a kind of bloom of bluish violet; the secondaries greenish-blue, tipped with white; and the wing-coverts violet-blue, tipped with black. The sides of the body are marked by fine transverse undulating lines of black, on a drab-coloured ground; immediately beneath the wings are placed a series of broad alternate crescent-shaped bands of black and white; and the lateral tail-coverts, which are loose and hairlike in their texture, exhibit a beautiful metallick gloss. The bill is red, with a black margin and a patch of black extending from between the nostrils nearly to the strongly-hooked tip, which is also black; the iris, orange-red; and the legs and feet reddish-yellow.

In the female, the crown of the head is deep purple, with a bar of white behind the eye; the throat white; the neck and sides of the head of a deep drab; the breast dusky, with large triangular spots of white; and the back dark glossy brown, with varying shades of green and gold. In other respects, her colours nearly resemble those of the male, except that she wants the fine pencilling of the sides, and the long floating hairlike coverts of the tail.

We learn from Wilson that this elegant species is familiarly known in every part of the United States from Florida to Lake Ontario; and it is equally abundant in Mexico and in many of the West India islands. Its name of summer duck was given to it by the Anglo-Americans, on account of its usually migrating to the south during the winter; but in some of the southern states it is occasionally met with throughout the year. Its favourite haunts are the solitary, deep, and muddy creeks, ponds, and milldams of the interiour, which it seldom quits to visit the seashore. In Pennsylvania, the female generally begins to lay late in April or early in May, and instances have been known in which the nest was constructed of a few sticks laid in a fork of the branches of a tree. More commonly, however, the inside of a hollow trunk is selected for this purpose, from which circumstance the bird has sometimes been called the wood duck. The eggs, which are very numerous, for Wilson found thirteen in one nest, are exactly oval, smaller than those of a hen, with a finely-grained surface, of the highest polish, and slightly yellowish. The female appears, from a curious history given by Wilson, to make her nest in the same spot, if undisturbed, for several successive years. This species is seldom seen in flocks of more than three or four, and most commonly in pairs or singly. Their food consists principally of acorns, the seeds of the wild-oats, and insects; and their flesh is said to be inferiour to that of the blue-winged teal, but they are nevertheless frequent in the markets of Philadelphia.

The summer duck is very easily tamed, and even becomes so familiar as to suffer its back to be stroked with the hand. Wilson was informed by a credible witness whom he names, that he had seen a whole yard swarming with summer ducks, tamed and completely domesticated, which bred as well, and were as familiar, as any other tame fowls. In Europe their great beauty has long procured them a place in fancy collections, of which they form a conspicuous ornament.

THE CIVET, OR MUSKCAT.
Viverra Civetta. Linn.

Under the generick name of viverra, Linnæus comprehended a series, or, to speak more properly, a congeries, of quadrupeds, differing from each other so remarkably in form, in structure, and in habits, as to render it absolutely impossible to find characters by which they might be circumscribed and isolated from their fellows. His definition of the genus, therefore, although purposely expressed in terms the most vague and indistinct, neither excludes such animals as, from their obvious affinities, he could not refrain from referring to other groups, nor includes full one half of the species which he has arranged beneath it. The ichneumon of the Nile, the suircate of the Cape, the coati of South America, the stinking-weasels of the North, the civet of Barbary, the genette of the East, the ratel of South Africa, and others equally distant in affinity, were sweepingly compelled into this ample receptacle, which was converted into a genuine "refuge for the houseless," in which every carnivorous quadruped, known, unknown, or imperfectly known, that appeared to be without a place elsewhere, was charitably afforded a temporary asylum.

In this arrangement, which brought animals truly digitigrade, with retractile claws, tongues covered with sharp papillæ, canine teeth of great power, and molars formed for tearing flesh, consequently in a high degree sanguinary and carnivorous in their habits, into close and intimate contact with others, which are positively plantigrade, with exserted claws, smooth tongues, and teeth of little power and evidently incapable of lacerating animal food, and which are therefore in all cases more or less, and in several instances wholly, vegetable-eaters, it was impossible for naturalists long to coincide. The genus thus formed presented so heterogeneous a combination, that the difficulty was rather where to stop in the dispersion of the dissimilar materials of which it was composed, than where to commence the necessary operation; and in consequence nearly a dozen genera, not hanging together in one continued series, but scattered through various parts of the system, and most of them essentially distinct, have been the result of the dismemberment of this single group.

The true civets, to which the genus viverra is now restricted, yield in the extent of their carnivorous propensities to the cats alone, whom they approach very closely in many points of their zoological character, as well as in their predatory, sanguinary, and nocturnal habits. In addition to the six incisors and two canines, which are common to the whole of the true carnivora, they have on each side and in each jaw six molars, one of which is peculiarly adapted for lacerating flesh, while the rest are more or less of the ordinary form. Their tongues are furnished with the same elevated and pointed papillæ which give so remarkable an asperity to those of the cats; and their claws are half retractile. The toes are five in number on each of the feet, and their extremities alone are applied to the ground in walking; the animals are consequently completely digitigrade. But the most distinctive character of the group consists in an opening near the tail, leading into a double cavity of considerable size, furnished with glands and follicles for the secretion of the peculiar odoriferous substance so well known as the produce of the civet, and from which the animal derives his name.

The present species is from two to three feet in length, exclusive of the tail, which is nearly half as much more; and stands from ten to twelve inches high. His body, which is more elongated in its form than that of any of the animals hitherto described, is covered with long hair, the ground-colour of which is of a brownish-gray, intermingled with numerous transverse interrupted bands or irregular spots of black. A series of longer hairs of the latter colour occupy the middle line of the back, from between the shoulders to the extremity of the tail, and form a kind of mane, which may be raised or depressed at pleasure. The legs and greater part of the tail are perfectly black, and the upper lip and sides of the neck nearly white. A large patch of black surrounds each eye, and passes from it to the angle of the mouth; and two or three other bands of the same colour pass obliquely from the base of the ears towards the shoulder and neck, the latter of which is marked by a broad black patch.

In his natural habits, the civet closely resembles the fox and the less powerful species of cats, subsisting by rapine, and attacking the birds and smaller quadrupeds, which form his principal food, rather by night and surprise than by open force and in the face of day: reduced to a state of captivity, he becomes moderately tame, but not sufficiently so to allow himself to be handled with impunity. In many parts of Northern Africa large numbers of them are kept for the purpose of obtaining their perfume, which bears a high price and is much esteemed.

EARLY HISTORY OF THE SALT MANUFACTURE.

BY S. P. HILDRETH, OF MARIETTA, OHIO.

At the first settling of the Kenhawa river, a large buffalo-lick was discovered on the northeast side of the river, about six miles above the mouth of Elk river, and a short distance above the mouth of Campbell's creek, near the margin of the river at low water. Nearly opposite to the lick is a low gap in the ridge, through which the buffalo and deer passed on their way to the lick, in such numbers, that their paths up and down the creek were worn so deep, as to be visible at this day. For a considerable distance round the lick, not only the herbage but the foliage of the trees, as high as the animals could reach, was all eaten up by the buffaloes, after they had drank of the salt water. If not disturbed by the hunters, they generally remained here two or three days. At this spot, several hollow logs, or "gums," were found, sunk into the gravel at the margin of the river, and probably placed there by the Indians, as they had every mark of great antiquity. In the same manner, the early settlers sunk gums into the bed of the river, six or eight feet deep, in which was collected a very weak water, and from it they made a little salt for their own use. In the year 1794, Joseph Ruffner, of Shenandoah county, Va., bought a tract of five hundred and two acres, including the buffalo-lick; and in 1795, he moved his family on to the Kenhawa. But little was done towards making salt, until the year 1807, when David and Joseph Ruffner, sons of Joseph, bought a tract of land a little above the buffalo-lick, and commenced their operations about one hundred yards above the lick, where there was no appearance of salt water. Having selected a gum or hollow sycamore trunk, about eighteen feet long, and three feet across the cavity, they, with great labour and difficulty, sunk it in the gravel and sand, at the margin of the river, to the depth of fourteen feet, down to the smooth sandstone rock which forms the bed of the river, and is very uniformly found at this depth, up and down the river, as far as any gums have been sunk. The depth of the river, for ten miles above Elk, is uniformly about sixteen feet, and two hundred and fifty yards wide at low-water mark; by which it appears that little if any deposite is made in its bed by the floods from year to year. The lower part of the gravel through which the gum was sunk, for four or five feet, is very hard and tenacious, approaching that state when gravel-beds change into rock. When the gum was fairly settled on the rock, their next attempt was to sink a well or shaft into the rock, of sufficient depth to afford a supply of water, but in this they were foiled, as they could devise no means by which to keep out the water from the river so as to go on with their work. At length, by putting a tight bottom of planks into the gum, and, through a hole in the bottom, inserting a tube three inches in diameter, into the rock below, no water could enter but what passed through the tube. Here the process of boring was commenced, by an auger or chisel, passed through the tube, which bored a hole two and a half inches in diameter, the auger and rod, or pole, being fastened by a rope to a "sweep-pole." When they commenced, they little expected to obtain a supply of water by merely boring a hole in the rock, having never heard of such an attempt before; but in this they were agreeably disappointed. In order to ascertain the quality of the water, they had frequently to stop and clear the hole, not only of water but of the borings. At seventeen feet they struck a vein of salt water, the first indication of which was a bubbling or hissing of the gas in the hole. This water, though requiring three hundred gallons to make a bushel of salt, was then thought to be very good. The well was sunk to the depth of twenty-six feet, when they left off boring the first of October, 1807, and proceeded to the erection of a furnace of about forty kettles, which went into operation the 11th of February, 1808, and made about twenty-five bushels of salt a day, which was then worth two dollars per bushel. A small vein of fresh water, that came in a few feet below the top of the well, they contrived to exclude by means of a wooden tube, pushed down into the well, after reaming it out. From this example has arisen the practice of pushing down tin or copper tubes, by the modern well-borers, to any desirable depth. Not long after this, William Whitaker obtained salt water, and erected a furnace on the opposite side of the river; and about the same time a well was bored and a furnace erected at the old lick, and several improvements made, both above and below this spot. The salt water in the gums, at this early day, usually rose about a foot above the surface of the river at low stages—at high stages, the water rose with that of the river, but not quite so high as it was in the river. The salt water was also increased in strength as well as in quantity by a rise in the river. When the wells were only twenty-six feet deep, they afforded water only for two furnaces; but when, in the second year, they were deepened to sixty and ninety feet, the water was sufficient to supply four furnaces of sixty kettles, holding thirty or forty gallons each, making from fifty to sixty bushels of salt every twenty-four hours. To prevent the river, when high, from flowing into the gum, an additional one of eight or ten feet was set upon its top, and the water drawn out of it with a bucket and sweep by the hand. Soon after pumps were used, worked by horses, one set of pumps raising sufficient to supply two furnaces, which was the usual number attached to each well. The furnaces were about fifty or sixty feet in length, with the same number of kettles set in two rows. The fuel then used was wood. Successive improvements continued to be made, both in the form of the furnaces and in the size and shape of the kettles, until the latter reached the capacity of one hundred and fifty or two hundred gallons each, weighing from seventeen to nineteen hundred pounds, and requiring only five or six for a furnace. These large kettles were used only for boilers, the smaller ones still being continued for "graining" or crystalizing the salt. After coal came into use for fuel, which was not until the adjacent hills were stripped of their wood, in the year 1819, broad pans of sheet-iron were used for boilers. Colonel David Ruffner first introduced the use of coal, and his example was soon followed by the other manufacturers, who at that time had become numerous. He suffered considerable loss, and many disappointments, before he could adapt the form of the furnace and the pans to this new fuel. The pans were twelve or fourteen feet long, and three feet eight inches wide, and were placed in the front part of the furnace over the fire, for boilers. These being so corroded and worn out, cast-iron pans were substituted, made of separate pieces and fastened together with screws, the joints being tightened with a cement of cast-iron borings. With care, these pans lasted a long time. The pans used at the present period are about twenty-five feet long, and six and a half feet wide, and the length of the furnace from eighty to one hundred feet. The quantity of salt made at the time when they began to use the stone-coal furnaces was from two hundred and fifty to three hundred bushels per week. As the furnaces were enlarged, and improved in their structure and management, the quantity increased, until, at the present time, they make in some instances, nine hundred or a thousand bushels per week. The salt-water, as it comes from the wells, is very clear, and of the temperature of the coldest spring-water. When it becomes even moderately warm, it begins to turn red, and when saturated by boiling, it is nearly the colour of blood. In this state, it is drawn off into a large trough, called "the brine-trough," placed near the furnace, for the purpose of settling or clarifying. When cool it becomes perfectly clear and is then returned into the grainers, where it is boiled down into salt, and lifted out upon a platform, for the purpose of draining off the "bitter-water," or muriate of lime, a very abundant and troublesome component in all the western salines. In the course of eight or ten days, a red sediment, two or three inches in thickness, resembling red paint, forms in the bottom of the "brine-trough." It is composed principally of a carbonate of iron, held in solution by the carbonick acid gas of the water, and set free on the application of heat. At this period, a large portion of the furnaces have a small steam-engine attached for the purpose of raising water, which contains more salt the nearer they approach to the bottoms of the wells. The average quantity required to make a bushel of salt, is about seventy gallons. The total amount made in the year 1824, is estimated by the inspector at one million and a half of bushels—a very great distance from the year 1807.

Within a few years, the manufacture of coarse salt has been commenced, and large quantities are produced, equal in quality to the best Turk's island salt. After the water is evaporated to the state of a strong brine and purified, it is drawn off into a long shallow vat, or cistern, and kept at a moderate temperature by the aid of steam, furnished by the boilers, and conducted the whole length of the cistern in a metallick or a wooden pipe. The salt is deposited slowly on the bottom of the vat, in beautiful, four-sided pyramidal crystals, of great purity. It is removed once in eight days, and is then usually about a foot deep all over the floor of the vat; some vats are several hundred feet in length, and ten or twelve feet in width.

The Kenhawa salines present a most interesting and lively scene of activity and business. At intervals of every quarter of a mile, both shores of the river are lined with furnaces, sending forth dense curling volumes of coal smoke. The busy hum of voices, and the rattling of the "train-wagons," along the rail-ways, with the bustle of the salt-boats, and steam-boats, to which the depth of the river affords a safe and pleasant navigation to the upper furnaces, give to this spot all the life and activity of a large city.

PHYSICAL GEOGRAPHY

Phenomena of the Atmosphere.

There are two kinds of mists, *dry* and *wet.* Dry fogs, according to some philosophers, are intimately connected with volcanick eruptions. A mist of this kind enveloped all Europe in 1783, at the moment when the volcanick fire made Iceland tremble, and immediately after the disaster of Calabria, so familiar to all. A similar fog overspread the Tyrol and Switzerland, just before the earthquake at Lisbon, in 1755; it appeared composed of fine earthy particles.

Dew is supposed to be the result of radiation from the earth's surface into the higher regions of the atmosphere, by which the heat of the surface is found, in clear nights, from 7° to 12° below that of the atmosphere, a few feet above the surface. The air in contact with the surface, is, of course, cooled down to it, and deposites its moisture. Dews are always heaviest in clear still nights, clouds acting as a screen to prevent radiation, and winds bringing a constant supply of warmer particles. Dew is deposited abundantly in hot countries, where it is often a substitute for rain. In many places, however, it is hurtful both to man, and to the growth of plants.

Hoar-frost is dew frozen. Rain, snow, and hail, are familiar to all; and the nature and causes of each we have heretofore described. There are some atmospherical phenomena which were once considered as miraculous. *Showers* of *blood,* so called, amongst the number, take place when the rain-water draws with it a great number of certain red insects, which float in the atmosphere, or swarm on the earth. Water-spouts, volcanick eruptions, or winds, have sometimes filled the atmosphere in certain sections, with a vegetable powder or yellow dust, which being precipitated to the earth by rain, has given rise to the assertion, that *showers* of *sulphur* have actually occurred. Snow and rain, not unfrequently fall, charged with electricity; and the sparkling, on touching the ground, has led many to believe that the phenomenon was a *shower* of *fire* Parhelions and rainbows, both atmospherical phenomena, we have before described.

Many travellers, when standing upon very elevated mountains, have observed their own image reflected in very light fogs, and surrounded by several concentrick circles, adorned with the colours of the rainbow. These are called the *apotheoses* of travellers.

"The '*Mirage,*' or appearance of objects which are not actually in the horizon, or which exist there in a different situation, is one of the most remarkable of optical illusions. At sea, rocks and sands, concealed under the water, appear as if they were raised above the surface. The Swedish sailors long searched for a pretended magick island, which, from time to time could be descried upon the isles of Aland and the coasts of Upland. It was a rock elevated by the mirage. At times, the English have seen with terrour the coasts of Calais and Bologne apparently approaching the shores of their island. Vessels sometimes present themselves to the view as if they were upset, or as if sailing in the clouds. The most celebrated example of this phenomena, is that which is frequently seen in the straits of Messina, and which the people attribute to the fairy Morgana, *Fata Morgana.* The spectator, standing on the Italian coast, perceives, upon an inclined plane, formed by the waves driven towards the middle of the strait, images of palaces, embattled ramparts, houses and ships, at one time turned upside down, at another, confusedly set up again, and presenting the spectacle of towns and landscapes in the air. Of all the effects arising from this cause, that which has been most thoroughly examined, is the optical illusion which the French experienced in the deserts in the vicinity of Egypt; the sandy plain, covered in the distance by a thick vapour, presented the deceptive image of a vast lake, towards which they eagerly hastened, but which appeared to fly before them."

The zodiacal light, electricity, meteors, and the aurora borealis, are frequent and familiar occurrences in the atmosphere, to which we have given our separate attention in other places.

Animal substances, in a state of putrefaction, always emit phosphorus, which, taking fire from the contact of the atmosphere, produces light and wandering flames. Such is probably the origin of those *ignes fatui*, that flutter at night over churchyards and marsh-fields, so much to the excitement and disturbance of superstitious fears, arising, however, from the development of phosphoretted hydrogen; they are necessarily soon extinguished; a succession of these fires will therefore appear one single flame, which moves rapidly from place to place, when we attempt to approach it. The air driven on before us, forces the flame to recede.

A fire of this kind, which was immoveable, once occurred in Sweden. The superstitious supposed it to issue from the mouth of a dragon that kept watch over some hidden treasure. A miner, however, ventured to sink a shaft, which discovered a cavern filled with sulphurous pyrites and petroleum, the combustion of which had occasioned the phenomenon.

That fire which sailors frequently observe at the top of their masts, and is sometimes called the *fire of Saint Elmo*, is generally considered as an accumulation of electrick matter around a point which moves in the air. This phenomenon was observed by the ancients. When the fires were seen in pairs, they were called *Castor* and *Pollux;* when the flame was single it bore the name of *Helen.* The spears of an army, according to Homer and Virgil, often appeared ornamented with these electrical plumes. Forskal, a Swedish naturalist, travelling on horseback in snowy weather, saw his fingers, his switch, and the ears of his horse, covered with a fire of this description.

Globes of fire, sometimes of a red light, but oftener of a vivid whiteness, have been observed to shoot through the atmosphere with the rapidity of lightning. They sometimes appear, traverse the horizon, blaze for a few seconds, then break in pieces or discharge torrents of flame, with a tremendous detonation. They not unfrequently occasion great damage to houses as well as forests. Electricity and hydrogen are supposed to act an important part in these phenomena; but the true cause is merely conjectural. The stones which are sometimes discovered, are supposed to be the nuclei of the fire, but whence they are derived cannot be ascertained.

The shooting stars which sometimes fall to the earth, are supposed to be the effect of hydrogen gas more or less sulphuretted.

A most imposing and brilliant phenomenon occurred in November, 1833, which has received the appellation of the meteorick shower. It was observed in almost every part of the continent, and will probably be recollected by every one of our readers. As a similar phenomenon occurred the next year, it was imagined by some, that the meteors were derived from the extreme portions of a nebulous body, which revolves round the sun. This hypothesis led to the supposition that the same phenomenon occurred annually. It does not, however, seem to have been supported by the fact, inasmuch as the occurrence was not observed last year. There is but little doubt, however, that the phenomenon took place beyond the atmosphere of the earth.

There are hundreds of atmospherick phenomena continually occurring, which serve, however, on the one hand, but to remind us of the confined limits of our own comprehension, and on the other, to astonish us as the manifestations of the Almighty Omniscience.

We shall next speak of *physical climates.*

He that has energy enough in his constitution to root out a vice, should go a little farther, and try to plant a virtue in its place, otherwise he will have his labour to renew. A strong soil that has produced weeds, may be made to produce wheat, with far less difficulty than it would cost to make it produce nothing.

SUGAR-MAPLE TREE, AND SUGAR MAKING.

The *acer* genus of plants, includes about thirty-four species, of which the common name is maple. Eleven of these species belong to North America, twelve to Europe, six of great beauty to Japan, and the rest to different parts of Asia. The species commonly known in North America, are the red or soft-maple, the white or silver-maple, hairy-maple, the sugar-rock or hard-maple, the sweet-tree or black-maple, the striped-maple, also called false dogwood and moosewood, the mountain-maple bush, the ash-maple, or box-elder, and some southern varieties. Two only of the whole (*acer saccharinum*, the sugar-maple, and *acer nigrum* the sweet-tree or black-maple) produce sap, from which good sugar may be obtained. The timber, however, is of beautiful texture, and peculiarly adapted for ornamental purposes, though, it is not remarkable for durability and strength. The variety called bird's-eye and curled-maple, is held in great esteem. It is capable of being highly polished, and is frequently employed with good effect in inlaying. It is also considerably used in the manufacture of chairs and other pieces of furniture; fowling-pieces, musical instruments, ornamental work-boxes, &c. Indeed, the maple is not surpassed by many trees in the variety of purposes in which it may be usefully employed. The sugar-maple is found on this continent, principally between the 42d and 48th parallels of latitude. It is abundant in New England, New York, the north of Pennsylvania, the Canadas, and the northwestern states and territories. The black-maple flourishes in more southern and warmer climates, and is found on the banks of the Ohio and Mississippi, and in nearly all the southern and western states and territories.

Were it practicable, maple sugar could doubtless be manufactured in this country, in sufficient quantities to supply the consumption of the United States. But so long as brown sugar, the common sugar of commerce, can be produced with so much facility and cheapness, it can never he practicable or economical to manufacture maple sugar for general consumption. Indeed, it cannot now be manufactured, unless as an article of luxury, or in some remote parts of the country where labour is cheap, and fuel abundant, with any view to economy. As society advances, it is obvious that the practicability of manufacturing it will grow less and less, and soon its manufacture will become totally impracticable, unless as an article of luxury.

In very many parts of the northern states, there are fine maple orchards, and quite extensive sugaries. Many persons manufacture the sugar for the use of their families, and the surplus over a year's supply, is sent to market. The Indians also make considerable quantities, and carry it to market in little baskets made of birch-bark, fancifully wrought with porcupine-quills of various colours. In the country, it is to be bought frequently as low as six cents per pound; but the price in the city varies from twelve to twenty-five cents. Maple molasses is seldom found in market.

The sugar season commences usually about the middle of March, though not unfrequently a favourable time arrives towards the latter part of February. It should be commenced before the frost is out of the ground, or at least, before the sap begins to return to the branches and buds, for the development of the leaves. The most favourable season is when the nights are frosty, and the day moderately warm, with sun just sufficient to thaw the sap.

The first thing necessary to be done when the season arrives, is to prepare the spouts, and troughs or tubs. The first may be split from a block of pine or white wood with a gouge, so that they may be gouge-shaped at one end, in case a gouge is to be used in tapping, or they may be made of elder or any other pithy wood, if the trees are to be bored. It is possible that more sap may be obtained by cutting a notch in the tree with an axe, and inserting a gouge below it, than by boring into the tree with an auger; though the tree is not so much injured by the latter course as by the former. The vessels employed for catching the sap may be either small tubs or pails, or troughs hewn out of small pine or bass-wood timber. One man, with an axe and addice, may make two dozen troughs in a day. At old sugaries, however, the tubs and spouts are usually carefully housed and preserved from year to year, so that when the sugar season arrives they are always ready.

One or two of the tubs or troughs being placed at each tree, a small sloping incision, about two or three inches long and half an inch deep, is made into the tree, the under side of the cut being sloping, so that the sap may run down to its lowest point: if the tree be fit to tap, the sap oozes from the cut immediately. About an inch below the cut, the gouge is driven in, and the spout inserted, through which the sap is conveyed to the tub. If an auger be used, no incision is made with the axe, and a spout, round at the upper end, and a hole through the centre, is driven in. One man may tap two hundred trees or more in a day. One tapping generally answers for the season, and the trees, if not hacked too much, may be tapped for several years in succession.

The sap is collected daily, sometimes twice a day, in pails, and carried to the boiling-place and put into barrels, a cistern, or some other large vessel or vessels. One tree will furnish six, twelve, and sometimes twenty-four quarts in a day.

The sugar is produced by "boiling down" the sap. For that purpose, two stout crotches are fixed upright in the ground, eight or ten feet apart; and on them is placed a cross-stick from which pots or kettles are hung; a hook to hang them by being made of a small crooked branch of wood. Two large logs are rolled up on each side, and the fire is made underneath the kettles of split or small wood. There is usually one large kettle, which is supplied as the sap boils away from the smaller ones, so that it is kept constantly boiling, while the smaller ones are supplied with fresh sap. The kettles are thus kept boiling, till the contents of the larger one, arrive at the consistency of a thick sirup or molasses. The sirup is then taken out and strained into a barrel. Eggs, milk, or something else, is afterwards thrown in, to precipitate all its impurities to the bottom. It is then strained again, and put back into the kettle to be "sugared off." A piece of pork or butter is thrown in to keep it from boiling over. When it reaches that state, in which it candies, by pouring it on the snow, it is quite delicious to the palate. It is at this stage of the process, that gentlemen and ladies, who frequently happen in at the "sugaring off," enjoy themselves most. When it is finished, and that is known by its "graining," it is poured into a barrel or other vessel provided for the purpose. To produce a fine grain it is stirred with a stick or ladle. Unless stirred in this manner the grain is quite coarse, and, indeed, the whole may become a solid cake or mass. To make a dry article, a hole may be bored in the bottom of the vessel, and the molasses thus drained off. Several hundred pounds are made thus, according to the number of trees tapped, in the course of the season, which continues until near leafing-time. One good tree will perhaps produce five or six pounds or more.

Some of the maple orchards are very beautiful. The underbrush and all foreign trees are cleared out, and the majestick brotherhood of maples, with their tall clear trunks, rising perhaps fifty feet without a single limb or excrescence, and their generous boughs, with their broad palmated leaves extending far on high, mingling themselves with each other, as if to form a panoply for the fair scene below, are the sole monarchs of the delightful realm. Indeed, the forest maple yields to but few trees in point of magnificence and grandeur. As an ornamental shade tree, the maple is held in high esteem. It lends a charm to almost every pretty park or promenade in the pleasant villages New England, where it is an especial favourite.

RAMBLINGS IN WINTER.—No. III.

Cattaraugus county, N. Y., contains, probably, upwards of twenty thousand inhabitants—not more than two thirds as many as its eastern neighbour, Allegany, nor more than half the number of the contiguous Chatauque. These three counties closely resemble each other in every respect. The surface is generally uneven, stony, and heavily timbered, and the soil rather damp and cold, and not remarkable for its fertility. Cattaraugus is abundantly watered: it has the Cattaraugus creek on the north, and the Conewango and the beautiful Allegany on the south. The valley of the Allegany and the contiguous parts are perhaps the most valuable and extensive pine districts, with the exception of Maine, in the United States. The timber along the Allegany river, in the southern part of this county, and in the adjacent portion of Pennsylvania, is almost wholly pine; and the forests are of very great extent, and the trees large, tall, and excellent for lumber. The inhabitants of this district are chiefly engaged in the lumbering business, and agriculture is almost wholly neglected. The markets for the lumber are found down the Ohio river; some of it stops at Cincinnati, and much also goes to New Orleans. The logs are principally cut and hauled in the winter, and sawed at the mills in the summer and fall. Rafts are made upon the ice, and are thus very conveniently set afloat, on the opening of the rivers in the spring.

Ellicottville is the county town of Cattaraugus. I reached the place after a smart trot of twenty-two miles from Randolph, through quite a romantick country, over high hills and through secluded vales. The village is small, and consists of a few dwellings and stores, two or three hotels, a church, and courthouse. One of the hotels had raised the temperance standard; but within, the mocker, wine, was alluringly displayed, and a large box of tobacco and pipes were afforded *gratis*, to all who chose that kind of inebriation. The landlord expected that you would choose both, as a consideration of troubling his house. Temperance men profess to go against alcohol. Yet, they will drink wine, cider, ale, &c., for the very reason, that they contain alcohol. Now, what is the difference between wine, and rum and water? Or, to speak literally, what is the difference between alcohol in a diluted state, and alcohol in a diluted state? Now, pray, Mr. Landlord, come up to the high cold-water mark, or disband and get out of the way.

The county-supervisors were in session at this place. The town was filled with some score or more of these county-aldermen, with their numerous clients and petitioners. These grand seniors imbody the authority and majesty of the county, and sit in the name of the people to canvass votes, the demerits of dogs, and the outrages of wolves; to smooth highways, erect bridges, run fences, and impound stray swine; to superintend the poor, to supervise the county, and to march forces against wild-fires. They are a useful order of men, but at the conclusion of a canvass, they are always at the "treat." A stranger, on such an occasion, may acquaint himself with the whole county; for the whole county, indeed will surely be familiar with him.

I rued the afternoon that I left Ellicottville. It was that terrible afternoon in November, that produced so many sad disasters at Buffalo, and upon the lake. A cold rain, mingled with snow, had been falling during the morning, which became entirely snow in the afternoon. I had been but a short time on my way to Olean, when a fierce wind began to blow with unexampled violence. The thick snow was driven horizontally through the air, literally filling the eye and blinding the sight, while just sufficient lodged in the road to impede our progress. The whole forest seemed to bend before the demon of the blast, and many of the giant trees, the monuments of half a century, yielding to the infuriate force, were hurled with thundering crash to the ground. At one time, a huge branch, wrenched from its parent trunk, was fiercely driven through the air, and swept terribly close over our heads, threatening destruction in its course. My poor horse, trembling at every breath, shot from one side of the road to the other, like an affrighted hare, while his less instinctive rider, not a little heeded each successive crash, as a signal of impending doom. In the valleys I dreaded lest the tempest should pile its victims there; on the bleak hills its rude salutations more fully realized to me the invincibleness and terrour of its power. But it is in the storm, however fiercely the elements may be at strife, that man feels his superiority. The beast of the field may tremble at each demonstration of elemental violence: the fowls of the air may fly with terrour before the rising blast; but man alone, of all God's creation, is calm and deliberate amidst the confusion of the tempest, and he alone foreknowing its cause and foreseeing its consequences, may divest it of its terrours, avert its evils, and trim his bark in the midst with confidence and triumph. To feel the truth of these reflections inspired in one's self, is the abundant satisfaction of a traveller who is thus overtaken in his solitary way. That, indeed, was the secret of my complacency as I rambled slowly and difficultly along, with a drifting path before me, snowflakes pelting thick and fast upon me, and a biting blast whistling with rage and violence by and around. This exposure, with the aforesaid internal reward, was unwittingly prolonged, until I had measured five miles directly out of my course, and sunset brought me up at Farmersville! The pleasure of sitting down by a blazing fire, and partaking of a warm and hearty supper, was not a little enhanced by the reflection, that I had survived the storm, and was then, at least, fortified against its rude assaults; and, at the same time, it seemed a partial remuneration for the time and labour lost for the mischievous misdirection of a false cicerone.

The next day I reached Olean. This place called Olean *Point*, because it is situated in the bend of the Allegany river, was settled many years ago. In consequence of a want of proximity to a market, and its difficulty of access, it has failed to increase in business and population with that magical rapidity, which generally distinguishes the western towns. Of late, however, it has attracted considerable attention, and received a new stimulus from the important fact, that the New York and Erie rail-road, as projected, touches the Allegany at or near this point It numbers several hundred inhabitants, and has several stores, two or three publick houses, a few artisans, a grist-mill, and several saw-mills. The village is situated upon a level plot, elevated a few feet above the surface of the Allegany; but the neighbouring country, on every hand, is very hilly, heavily timbered with pine, the forests of which are of immense extent. The soil is a sandy loam, rocky in many places, with frequent indications of anthracite.

About twelve miles from Olean, down the river, is a settlement of several remnant tribes of Indians.—The land reserved for their use and occupation, extends along the banks of the Allegany for about twenty miles. Between the eastern limit of their reservation, and Olean Point, and about four miles below the latter, is a very fine level plot of ground, considerably elevated above the river, and gradually rising into the hills as it retires, which has been selected as a site for a new city. It is now covered with the loftiest pines, and surrounded by a "boundless contiguity of shade." Nothing animates that primitive spot, but now and then a chirping squirrel, a screaming jay, a bounding deer, or, peradventure the grating and clattering noise of a busy little saw-mill on the opposite side of the river. But it glories in the notable appellative of ALLEGANY CITY; though it may be styled more emphatically the City of the Woods, or most literally, as yet, the City of the Imagination. It is the city that is to be. Stand in the midst of that wilderness, and listen to the exuberant voice of a speculator; shut your eyes and give freedom to your fancy, and anon, by a sort of phantasmagorian operation, Allegany City, with its spires and domes, its storehouses and dwellings, its shipping and docks, its paved streets, and brick walls, its boxes, bags, crates, and wagon-loads of merchandise, its immensely busy trade, and its thousands of inhabitants hurrying to and fro in the confusion and activity of their multifarious pursuits—all are summoned to the mind, and you feel yourself a "looker on," as it were, in the midst. But open your eyes, and the illusion is gone: the smooth and placid Allegany flows on before you, as it has flowed for ages, with nothing to disturb its bosom, save now and then a wild bird, an Indian canoe, or an occasional timber-raft; while around you thickly stand the dark and towering pines in their primeval strength and grandeur.

But a few years shall elapse, and that forest shall have disappeared, and a proud city shall have usurped its place. Albeit, the plan of the city is already developed, and ere the spring arrives the axe-men shall be heard preparing the way for its coming. And why should there not be a city there? The plat is level, and sufficiently elevated, and although it is now locked in, it shall shortly have at least four great and important points of commercial communication. The New York and Erie rail-road, which will touch the Allegany at this point, will render it easily accessible from the lake and from the city of New York. The contemplated canal, will open a convenient communication with the city of Rochester. By removing a few slight obstructions in the river, a steam-boat and sloop navigation may connect it with Cincinnati, Louisville, and New Orleans. Will not Allegany city thus become a most important point, the general medium of communication between the great commercial emporium of the United States, and that vast country bordering on the western lakes and the great western rivers? If it does not become a jealous rival of the greatest of the western cities, I am no prophet.

PULQUE.

(Abridged from Black's Translation of Humboldt's New Spain.)

There hardly exists a race of savages upon the face of the earth, who cannot prepare some kind of beverage from the vegetable kingdom; yet there are few nations who cultivate certain plants, merely with a view to prepare beverages from them. The most part of civilized nations, draw their drinks from the same plants which constitute the basis of their nourishment; and the old continent affords us no instance of vine plantations but west of the Indus. But in the new continent, we have the example of a people, who not only extract liquors from the amylaceous and sugary substance of the maize, the maniock, and bananas, or from the pulp of several species of mimosa, but who cultivate expressly a plant of the family of the ananas, to convert its juice into a spirituous liquor, which is called pulque. On the interiour table-land, and in the intendency of Puebla, and in that of Mexico, through a vast extent of country, the eye reposes only on fields planted with pittes or maguey. This plant, of a coriaceous and prickly leaf, which, with the *cactus opuntia*, has become wild, since the sixteenth century, throughout all the south of Europe, the Canary islands, and the coast of Africa, gives a peculiar character to the Mexican landscape.

The agaves are planted in rows, at a distance of fifty-eight inches from each other. The plants only begin to yield the juice, which goes by the name of honey, on account of the sugary principle with which it abounds, when the hampe is on the point of its development. And as the plant is destroyed if the incision be made long before the flowers would naturally have developed themselves, it is of great importance for the cultivator to know exactly the period of efflorescence. Its proximity is announced by appearances, which the experienced cultivator readily understands. He goes daily through his plantations to mark the plants that approach afflorescence; and if he has any doubt, he applies to the *experts* of the village—old Indians, who, from longer experience, have a judgment, or rather tact, more securely to be relied on.

About the age of eight years in general, but in good soils so early as five, and in bad not till eighteen, a maguey begins to give signs of the development of its hampe. They then prepare to collect the juice of which the pulque is made. They cut the bundle of central leaves, and enlarge, insensibly, the wound, covering it with lateral leaves, which they raise by drawing them close and tying them at the extremities. In this wound the vessels appear to deposite all the juice which would have formed the colossal hampe, loaded with flowers. This is a true vegetable spring, that keeps running for two or three months, and from which the Indian draws three or four times a day. We may judge of the quickness or slowness of the motion of the juice, by the quantity of honey extracted from the maguey at different times of the day: a plant commonly yields, in twenty-four hours, 242 cubick inches, nearly equal to eight pints, of which three are obtained at sunrise, two at mid-day, and three at six in the evening. A very vigorous plant sometimes yields about seven quarts, or 454 cubick inches, per day, for from four to five months, which amounts to the enormous quantity of 67,130 cubick inches, supplied by a plant scarcely five feet in height.

The honey, or juice of the agave, is of a very agreeable sour taste. It easily ferments on account of the sugar and mucilage which it contains. To accelerate this fermentation, they add, however, a little old and acid pulque. This operation is terminated in three or four days. The vinous beverage, which resembles cider, has an odour of putrid meat, extremely disagreeable; but Europeans who have been able to get over the aversion which this fetid odour inspires, prefer the pulque to any other liquor. They consider it as stomachick, strengthening, and especially as very nutritive; and it is recommended to lean persons.

A very intoxicating brandy is formed from the pulque, which is called *mexical* or *aguardiente de maguey*, and though the Spanish colonial government prohibited its use, as prejudicial to the Spanish brandy trade, such quantities of it were manufactured, that the whole importation of brandy into Mexico alone amounted to 32,000 barrels.

But the maguey is not only the wine of the Aztecks, it can also supply the place of the hemp of Asia, and the papyrus of the Egyptians. The paper on which the ancient Mexicans painted their hieroglyphical figures, was made of the fibres of agave leaves, macerated in water, and disposed in layers like the Egyptian papyrus, and the mulberry of the South Sea islands. M. Humboldt brought home with him several fragments of Azteck manuscripts, written on maguey papers of a thickness, so different, that some of them resembled pasteboard, while others resembled Chinese paper. The thread which is obtained from the maguey, is known in Europe by the name of pite thread, and is preferred by naturalists to every other, because it is less subject to twist. The juice which the agave yields, when it is still far from the period of efflorescence, is very acid, and is successfully employed as a caustick in the cleansing of wounds. The prickles, which terminate the leaves, served, formerly, like those of the cactus, for pins and nails to the Indians.

Common sense is the growth of all countries

Common fame is often a common liar

Rammohun Roy

THE RAJAH RAMMOHUN ROY.

If the character of this distinguished Hindoo or Indian Bramin, as to the development of his mind and to his change of religious opinions, is not entirely *unique*, it is so uncommon that it deserves to be generally known to the Christian world.

Rammohun Roy was a native of Bengal; and was early taught the Persian and Arabick languages. He studied the works of Euclid, and Aristotle, and thus became acquainted with mathematicks and logick. He then went to Calcutta to learn Sanscrit, the language of the Hindoo sacred scriptures, the knowledge of which was necessary to his caste and profession as a Bramin. On the death of his father and elder brother, he became possessed of a large estate, at the age of twenty-five years: and he soon after fixed his residence where his ancestors had lived. About this time he wrote against "the idolatry of all religions." The publication gave great offence to the Hindoos and Mohammedans where he then resided, and he returned to Calcutta, in 1814. About this period, he studied the English language and soon after the Latin, Greek, and Hebrew.

It is evident from his first work that he regarded with great disapprobation and disgust, the monstrous and debasing system of idolatry, embraced by his countrymen. A careful study of the sacred writings of the Hindoos, convinced him that the prevailing notions of a multiplicity of deities, and the superstitious devotion to the licentious and inhuman customs connected with them, were founded in utter ignorance or gross perversion of their religion. The original records appeared to him to inculcate a system of pure Theism, which taught the being of *one* God; and that required of its professors a mental rather than an outward worship, with strict personal virtue. With these views of Hindoo theology and morals, he was anxious to reform the creed and practice of his countrymen, and devoted his time and fortune to this benevolent object.

Rammohun Roy thus appears as a great and rare light, to his ignorant and superstitious countrymen, who were in gross moral darkness and errour. In the ancient writings which he studied, (of three thousand years before,) he found traces of the patriarchal religion, which was the belief of Abraham, Job, and others of their day, who had received instruction from their ancestors, extending back to Shem, and even to Noah.

With this information, and in the state of mind which it produced, perceiving the errours and absurdities both of idolatry and polytheism, and satisfied that the early sages of India taught a more just and rational religion, he read the Christian scriptures with attention. His object was moral and religious truth; and he says "he found the Christian doctrines more conducive to moral principles, and better adapted for the use of reasonable beings than any other which had come to his knowledge." But he was not content with studying the doctrines of the gospel in the creeds and systems in popular use. This personal and candid inquiry convinced him, not only that the Christian religion was more rational and excellent than any other, but that it was of divine origin. He satisfied himself also, that some of the popular tenets of the teachers of Christianity, especially those confessedly of a speculative or mysterious character, were not supported by the gospels; but that the writings both of the Old and New Testaments clearly taught the doctrine of the *Divine Unity*, and that Jesus of Nazareth was his inspired messenger to mankind.

Having become a convert to Christianity, he wished to present it to his countrymen, for their examination and acceptance; and this he did in a pamphlet, with the title, "The instructions and precepts of Josus, the guide to peace and happiness." But neither this appeal, nor other publications of Rammohun Roy, on the same most important subject, have, as yet, had any great effect with the idolators and polytheists of Hindostan. If they are read in the spirit they ought to be, and in which they were written, we have reason to hope that some favourable impressions will be made on the minds of heathens and pagans every where.

Rammohun Roy is a phenomenon in the pagan world, in modern times. His independence, his impartiality, his love of moral truth, and his zealous inquiries to find it, together with the consideration of his personal sacrifices and dangers by his honesty of purpose, justly claim for him the praise and admiration of all lovers of moral and religious truth. We trust his example will not be lost upon mankind and the world.

Rammohun Roy visited England about two years ago, charged with some publick business to the government of that country; and with a view, probably, to a further knowledge of the characters, opinions and customs of the first nation in Christendom. There he died during the year past.

It is not strange that the ignorant and interested supporters of heathen worship, endeavoured to defend it, by imputations on the character of this reformer. They charged him with "rashness, self-conceit, arrogance and impiety." Even his mother bitterly condemned him. She was a woman of strong mind, but was wedded to the idolatry and polytheism of her country, and was also under the influence of the superstitious and selfish priests. A short time, however, before her death, or separation from him, she said: "You are right, but I am a weak woman, and am too old to give up these ancient observances, which are a comfort to me." This is the language and sentiment of nature: and it accounts for the reluctance with which all persons (heathens or even Christians) give up their early faith and habits.

LIGHT.

At the depth of seven hundred and twenty feet through sea-water, according to Bougour, light ceases to be transmitted; and probably at three times that depth there is perpetual darkness.

Only one hundred thousandth part of the vertical rays of the sun can penetrate below forty-seven fathoms; the depths of the ocean are consequently involved in perpetual darkness.

The most remarkable property of light is its velocity.

ANTIQUE STATUES.

Four statues, and a cenotaph in stone, all supposed to be of the fourteenth century, have been lately found in a vault in the castle of Lassavas, in Switzerland. Two of the statues represent females, and the other two, armed knights. One of the knights presents a curious figure; his cuiras is open, and two toads are knawing his sides—the visor is up, and two more toads are preying upon his cheeks. It is supposed, that there is some legend of the revolutionary wars of that period connected with this figure, but as yet, no trace of it has been found.

THE WIDOWED MOTHER.—Wilson.

Beside her babe, who sweetly slept,
A widow'd mother sat and wept
O'er years of love gone by;
And as the sobs thick-gathering came,
She murmur'd her dead husband's name
'Mid that sad lullaby.

Well might that lullaby be sad,
For not one single friend she had
On this cold-hearted earth:
The sea will not give back its prey,
And they were wrapp'd in foreign clay
Who gave the orphan birth.

Steadfastly as a star doth look
Upon a little murmuring brook,
She gazed upon the bosom
And fair brow of her sleeping son:—
"Oh merciful Heaven! when I'm gone,
Thine is this earthly blossom."

While thus she spoke, a sunbeam broke
Into the room:—the babe awoke,
And from his cradle smiled!
Ah me! what kindling smiles met there!
I knew not whether was more fair,
The mother or the child!

With joy fresh sprung from short alarms,
The smiler stretch'd his rosy arms,
And to her bosom lept—
All tears at once were swept away,
And said a face as bright as day:—
"Forgive me! that I wept!"

Sufferings there are from nature sprung,
Ear hath not heard, nor poet's tongue
May venture to declare;
But this, as holy writ, is sure—
The griefs she bids us here endure
She can herself repair.

THE HISTORY OF PRINTING.

(Continued from page 348.)

ANCIENT MODE OF PRINTING WITH BLOCKS.

The Biblia Pauperum, or Bible of the Poor, was an abridgment, or catechism of the Bible, consisting of forty leaves, of a small folio size, each leaf being a wood-cut, with descriptive sentences, explanatory of their meanings; a few copies of this work remain, but are in a mutilated state; this, and the "Speculum Humanæ Salvationis," seem to be the first specimens of book-printing.

According to tradition, some of Coster's types are said to have been stolen by one of his servants,[*] John Geinsfleich, senior, who fled with them to Mentz. Having introduced the art from Haarlem into this, his native city, he commenced a business of his own, and published, in 1442, "Alexandri Galli Doctrinale;"[†] and "Petri Hispani Tractatus Logicales,"[‡] which two works being small, best suited his circumstances, and being much used in schools, he might reasonably expect a ready and profitable sale. They were executed with wooden types, cut after the model of those he had stolen. In 1443 he hired the house Zum Jungen, and was assisted with money by Faust, who, in return, had a share of the business, and about the same time, John Meidenbachus was admitted a partner, as were some others, whose names are now unknown; and, in 1444, they were joined by Guttenberg, who, for that purpose, quitted Strasburg. Wooden types being found not sufficiently durable, and not answering the expectation in other respects, the two brothers are said to have been the first who invented "cut metal types." But while these things were preparing, which must have been a work of time, several works were printed, both on wooden separate types and on wooden blocks, which were well adapted to small books of frequent use, such as the "Tabula Alphabetica," "The Catholicon," "Danati Grammatica," and the "Confessionalia." Immediately upon completing the metal types, the abovementioned printers, in conjunction, set about and effected a printed edition of the Bible,[*] which was published in 1450, after the labour of seven or eight years.

In the same year, (1450,) according to some authors, the partnership was dissolved, and a new one entered into in August, between *Faust* and *Guttenberg*—the former supplying money, the latter skill. Various difficulties arising, occasioned a lawsuit for the money which Faust had advanced, which was determined against Guttenberg. A dissolution of this partnership occurred in 1455; and in 1457, a magnificent edition of the PSALTER was published by *Faust* and *Schoeffer*, typographers, with a remarkable commendation, in which they assumed to themselves the merit of a new invention; namely, that of metal types. This book was uncommonly elegant, and, in some measure the work of Guttenberg; as it was four years in the press, and came out but 18 months after the partnership was dissolved between him and Faust. The latter continued in the possession of the printing office; and Guttenberg, by the pecuniary assistance of Conrad Humery, of Mentz, and others, opened another office in the same city, whence appeared, in 1460, without the printer's name, the "*Catholicon*," with a pompous colophon in praise of its beauty, and ascribing the honour of the invention to the city of Mentz.[†] It was a very handsome book, though inferiour to the Psalter which had been published by Faust and Schoeffer. Both the Psalter and Catholicon were printed in cut metal types. It may not be improper to observe here, that as the Psalter is the earliest book which is known to have a genuine date, it became a common practice, after that publication, for printers to claim their own performances by adding their names to them. The progress of the art has been traced through its second period, the invention of cut metal types; but the honour of completing the discovery is generally considered to be due to Peter Schoeffer: indeed, both Faust and Schoeffer seemed to have been indefatigable improvers of the printing art, both as to materials for the mechanical operation, and taste in the production of their works;

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[*] Authors greatly differ as to the person who committed this robbery. It is clear, from all accounts, that his name was John, but what his surname wasis a disputed point. Junius, after some hesitation, ascribes it to John Faust, but with injustice, for he was a wealthy man, who assisted the first printers at Mentz with money, though he was afterwards proprieter of a printing office, yet he never, as far as it appears, performed any part of the business with his own hands; and, consequently, he never would have been a servant to Coster. Nor is the conjecture of Scrieverius better founded, which fixes it upon John Guttenberg, who, as appears by authentick testimonies, resided at Strasburg, from 1436 to 1444, and during all that period, employed much fruitless labour and expense, in endeavouring to attain this art. Mr. Meerman once thought, "it might be either John Meidenbachus, (who, we are told by Seb. Munster, and the author of Chronographia Meguntinensis, was an assistant to the first Mentz printers,) or John Petersheimius, who was some time a servant to Faust and Schoeffer, and set up a printing office at Frankfort, in 1459; or, lastly, some other person, who, being unable, through poverty, to carry on the business, discovered it to Geinsfleich, at Mentz." But more authentick intelligence afterwards convinced him there were two persons of this name; and that John Geinsfleich, senior, was the dishonest servant, who was born at Mentz, and who, in the papers published by Kohlerus, we find there in the year 1441 and not before; for, though he was of a good family, yet he was poor, and seems to have been obliged, as well as his brother, to seek his livelihood in a foreign country; and, perhaps, was content to be under Laurence Coster, in order that, when he had learned the art, he might follow it in his own. But, to leave conjectures, we may produce some certain testimonies. The brother of Geinsfleich is usually distinguished by the name of Guttenberg. They were both married men, and most probably, brothers, as it was not uncommon, in that age, for two brothers to have the same Christian name. They both appear in a very disreputable light. The youngest is said to have been very contentious, and the elder is said to have robbed his master under most aggravating circumstances. Though they were both very poor, their family was distinguished by knighthood.

[†] Alexander's French Instructer.

[‡] Tracts on Logick, by Peter, of Spain.

[*] Many writers have supposed that this was the edition of which some copies were sold in France, by Faust, as manuscripts, for the great price of 500 or 600 crowns, which he afterwards lowered to 60, and at last to 30; but it was the second and more expensive edition of 1462, that was thus disposed of, when Faust went to Paris, in 1466, and which had cost 4000 florins before the quaternion (or quire of four sheets) was printed.—*Meerman.*

[†] At the death of Guttenberg, Conrad Humery took possession of all his printing materials, and engaged to the archbishop Adolphus, that he never would sell them to any one but a citizen of Mentz. They were, however, soon disposed of to Nicholas Bechtermunze, of Altavilla, who, in 1469, published the "*Vocabularium Latino Teutonicum*," which was printed with the same types which had been used in the Catholicon. This very curious and scarce vocabulary was shown to Mr. Meerman by Mr. Bryant, in the duke of Marlborough's valuable library at Blenheim. It is in quarto, thirty-five lines long, contains many extracts from the Catholicon, and is called "*Ex Quo*," from the preface beginning with these words.—"*Meerman*," Vol. II. page 96.

Guttenberg never used any other than either wooden or cut metal types till the year 1462. He died in 1468; his elder brother, Geinsfleich, died in 1462. Their epitaphs are printed by Mr. Meerman, Vol. II, pp. 154, 195. The ingenious Gerard Meerman was a pensionary of Rotterdam.

they printed many books with cut metal types, and more eminent writers assert, that the first entire and complete book, "Tully's Offices," in quarto, was printed by them, of which there are copies in the Bodleian Library, and Corpus Christi College, Oxford, of the date of 1465. Peter Schoeffer, the partner and son-in-law of Faust, is allowed the invention of casting the types; he privately cut *matrices** for the whole alphabet; and having succeeded to his expectation, he exhibited his work of ingenuity to his partner, which pleased him highly, and after finding out the method of hardening these castings, they found a great advantage in the use of them; the first work printed with these types was "Durandi Rationale," in 1459; but only the small-letter type, as it appears the capitals were still of cut type. The citizens of Mentz would fain claim the honour of the whole "art of printing," and they have some monumental inscriptions to that effect: one in the front of the house which Guttenberg inhabited in that city, which is as follows:—

JOHANNI GUTTENBERGENSI MOGUNTINO
QUI PRIMUS OMNIUM LITERAS ÆRE
IMPRIMENDAS INVENIT
HAC ARTE DE TOTO ORBE BENE MEMENTI;
IVO WITIGENSIS
HOC SAXUM PRO MONUMENTO POSUIT.

Englished thus:—

IVES OF WITIGEN
ERECTED THIS MONUMENT
TO THE MEMORY OF
JOHN GUTTENBERG MOGUNTIN,
WHO FIRST INVENTED THE ART OF
CASTING FUSIL TYPES.

In 1642, Faust is said to have carried a considerable number of Bibles to Paris, which he and Schoeffer had printed to imitate those which were commonly sold in manuscript; the art of printing at Paris being then unknown. At first he sold them as high as 600 crowns per copy, being the same as was usually charged by the scribes; but afterwards gradually lowering his price, till he came to 60, and even as low as 30 crowns; this, with the exact uniformity of the copies, which appeared to be all done by the same hand, astonished the people beyond measure; hence the Parisians declared it impossible that it could be any other than the work of a magician; they, therefore, "are said to have searched his lodgings, and finding a great number of Bibles ornamented with red ink, they concluded it was blood, and that Belzebub must be his coadjutor; impelled by those superstitious notions, they seized on Faust, and cast him into prison; and as they intended to accuse him of necromancy, and put him to death as a wizard, he was obliged, as the ransom of his life, to divulge the secret, and publickly make known the mysterious '*art of printing*.' This event gave rise to the tradition of the 'Devil and Doctor Faustus,' handed down to the present time."† It is supposed that he died of the plague which raged in Paris, in 1466.

In all the oldest books printed at Mentz, yet discovered, are inscriptions which style that city, "the mother and inventress of printing." If Haarlem could have advanced a claim equal to that of Mentz, and upon as good grounds, for the invention of printing, it is singular that this city should have enjoyed it without interruption for more than 125 years; and that none of the Dutch writers attempted, in that long period of time, to disprove the colophons, or inscriptions, which Faust subjoined to his works, when it was out of his power to conceal his art, and wherein he mentions the inventors, and the manner in which the books were printed. Among the most celebrated of the writers who have treated on this invention, were Wimpheling, Palmerus, Althamers, Trimethius, Aventine, Thevet, Rocha, Apianus, Langius, and Burgamensis; but none deserved more attention than the Abbot Trimethius, who lived about the time the discovery was made.

It is very remarkable, that none of these writers mention Guttenberg, otherwise than as an assistant. Mr. Palmer says:—"Among all the learned I have conversed with, whose curiosity hath let them to search into the rise and progress of printing, and all the writers upon this subject I could ever meet with, not one has pretended to have seen any book printed in John Guttenberg's name; even in the oldest monuments remaining of the infancy of this art, whether printed upon wood, or by separate metal types. That, on the contrary, where there is any mention made of either printer or place, it is still in Faust and Schoeffer's names. Therefore, until there is some better proof of Guttenberg's name, either jointly with the other two, or separately, or some book produced with it, it seems evident, beyond contradiction, that the glory of this invention is wholly due to John Faust, and the improving and perfecting it, to his son-in-law, Peter Schoeffer, exclusive of John Guttenberg."

Talmuth informs us, that John Schoeffer added considerably to the improvement of printing, by inventing punches, matrices, &c., and speaks of the difficulties which Faust and he met with, owing to the softness of the metal in which they had cast their first types; and of his discovering a mixture, by means of antimony, which fully answered the purpose: this so pleased Faust, that he made him his son-in-law.

Here it may be remarked, as an established rule, that all dates before the year 1450 are false; and this is confirmed by the suffrage of all learned writers upon the subject. Until the year 1468, the proficients in this new art had proceeded no farther than in the common alphabet, suited to the vulgar and Latin tongues. The Gothick alphabet, as it most resembled the manuscripts of those times, was the first attempt; then some of the Italian princes introduced the Roman alphabet; and, in a short time, brought it to such perfection, that, in the beginning of the year 1474, they cast a letter not much inferiour to the best types of the present age; as may be seen in a Latin grammar, written by Omnibonus Leonicenus, and printed at Padua, January 4, 1474. It is from this work that our grammarian Lilly has taken the entire scheme of his grammar, transcribing the greatest part of it, without paying any regard to the memory of this author. At length the Italick alphabet became generally admired; but there were no Greek types till about the year 1476, when the Italian printers cast them upon the same principles as they had done the other alphabets; yet, we are not able to ascertain whether this was first introduced by the Venetians, Milanese, or Florentines, each of them claiming the reputation of that improvement, though it is universally allowed that two Jewish rabbins, Joshua and Moses, were the first that published the Hebrew characters in separate types at Saccina, a little city in the dutchy of Milan, in 1480. About the end of the sixteenth century, the Vatican and Paris printers introduced the Syriack, Arabick, Persian, Arminian, and Coptick or Egyptian characters; which, with a great variety of Chinese, Indian, and other types, have been improved by the printers of London.

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* Matrices, hollow beds, or moulds, into which the melted metals being poured, they receive the form of the matrice.

† There is no doubt of Faust's having sold, as manuscripts, at Paris, copies either of the above Bible, or of that preserved in the Mazarine library; that he may have sold them at different prices, and that some of the purchasers may have complained of being overcharged; but in regard to the accusation of *magick*, it is a mere fable that deserves no credit. However, there can be no doubt that Faust never appeared at Paris after the year 1466; he was there at that period, as is proved by a copy of "Cicero's Offices" published that year by him and Schoeffer, his son-in-law, which is still to be seen in the publick library of Geneva, and at the end of which is a note, written by the first possessor, stating, "*that it was given to him by John Faust, at Paris, in the month of July*, 1466."

The secret of printing becoming known, and patronised by kings, and esteemed a divine blessing to mankind, it spread far over divers nations, appearing almost instantaneously at Rome, Venice, London, and Paris; and in a short time, reached to the other quarters of the globe. The art of printing passed from Haarlem to Rome, in 1467; in 1468 it was carried to Venice and Paris, and in 1471, to London.

The typographical fame of the city of Mentz seems to have been entirely confined to the family of Faust; and that no farther than his grandson, John Schoeffer, who was likewise an excellent printer; but, it is conjectured, that when his father died he was very young, as nothing of his printing is to be found until 1503; when he acquaints his readers, in his colophons to his first impressions, that he was the son of Peter Schoeffer, and grandson to Faust, the first inventor of the art, and that himself was an excellent master of it, and an eminent citizen of Mentz.

After a distance of nearly 400 years, it is not easy to decide rightly upon these several claims: but as to the cities, Haarlem and Mentz, the disputes between them seem easily cleared up, from the twofold invention of printing abovementioned; the first with separate wooden types, at Haarlem, by Coster, in 1430, and afterwards continued by his family; the other with metal types, first cut, and afterwards cast, which were invented at Mentz, but not used in Holland till taken thither by Theodoric Martens, at Alost, about the year 1472. From this period, printing made a rapid progress in most of the principal towns in Europe. In 1490, it reached constantinople; and, according to Mr. Palmer, (p. 281,) it was extended, by the middle of the century, to Asia, Africa, and America. It was introduced into Russia about 1560; but, from motives either of policy or superstition, it was speedily suppressed by the ruling powers; and even under the present enlightened age it is limited. Thus, we have briefly shown where, and by whom, the "art of printing" with separate types was invented; and, also, how it was first dispersed; we shall therefore proceed to the account of the practice of this art in England.

INTRODUCTION OF PRINTING INTO ENGLAND.

In what uncertainty the history of the first use of printing in England is, may be seen by the following short and imperfect detail. Some of our almanack makers tell us that printing was first used in England, A. D. 1443; others say, not till after 1459. The workmen of the printing-press, at the theatre in Oxford, in a paper printed by them, August 23, A. D. 1729, affirm, that the noble art and mystery of printing was first invented in the year 1430, and brought into England in the year 1447; a mistake, perhaps for 1474, or rather 1471. The learned Mr. Collier assures us that the mystery of printing appeared ten years sooner at the university of Oxford, than at any other place in Europe, Haarlem and Mentz excepted, which fixes the introduction of it there as early as 1457; since, it is certain, that it appeared at Rome, and elsewhere in Europe, in 1467; though, by the date put in the margin, he seems willing to have had it thought, that it did not appear at Oxford before 1464. Some writers suppose, that this art was first brought into England in 1460; and Mr. Bailey implicitly follows Atkyn's romance of the introduction of it in the reign of King Henry VI., or before 1460. But the generality of our English chronicles, which mention it, tell us that printing was first practised by Caxton, in 1741, at Westminster, under the patronage of the abbot.

According to the opinion of our best historians, the "art of printing" was introduced and first practised in England, by William Caxton, a mercer and citizen of London, who, during his travels abroad, and a residence of many years in Holland, Flanders, and Germany, in the affairs of trade, had obtained a knowledge of this art, and returned to his native country, about 1701-2. His press was set up, and worked for a considerable time at Westminster Abbey, under the immediate patronage of the then abbot. His quiet enjoyment of the process, for five or six years, without a contemporary rival, sufficiently proves that no one besides himself, in England, knew any thing of the use of the press or printing; and that any pretensions to priority, however strenuously asserted by some, in favour of any other, must be altogether fallacious and unfounded.

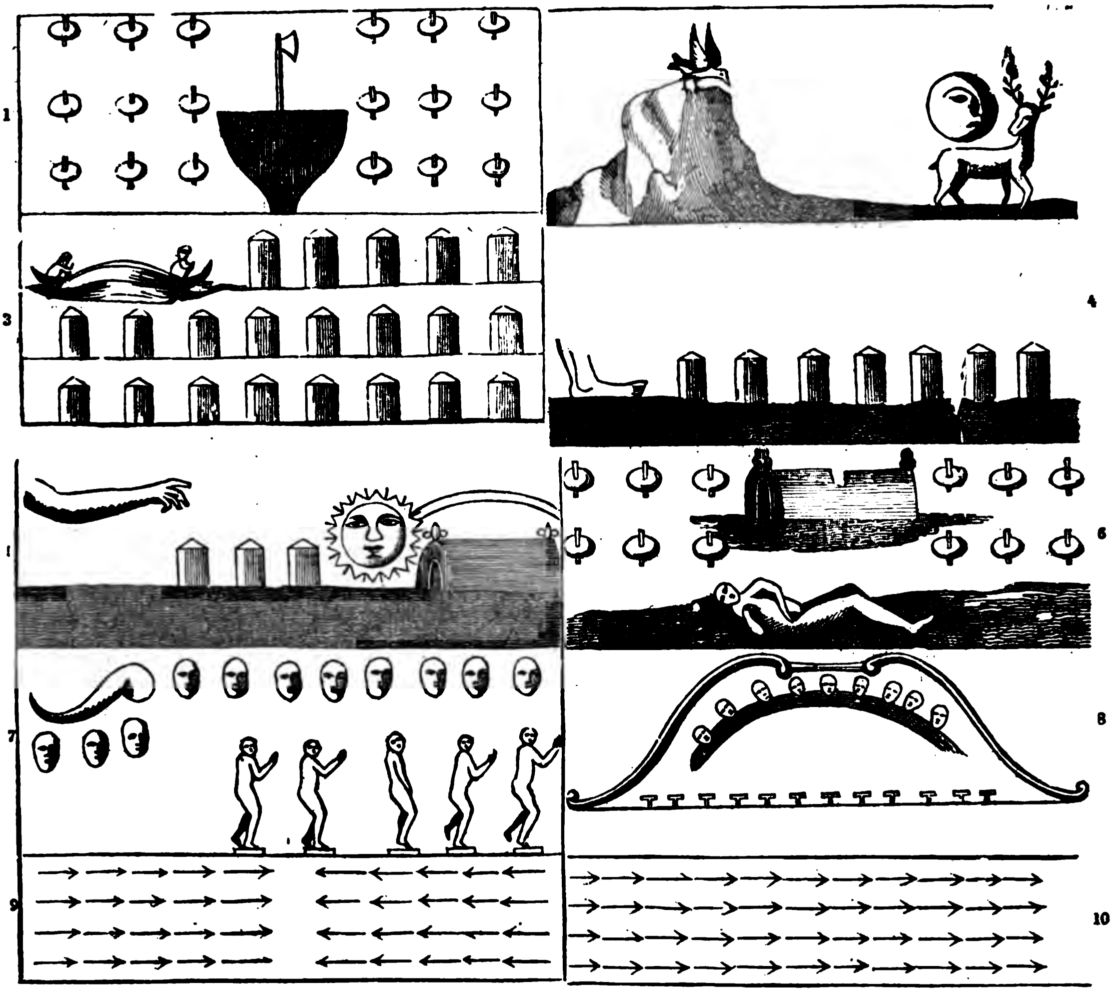
AN INDIAN GAZETTE.

As germane to the history of printing we present to our readers, the following engraving which represents a NORTH AMERICAN INDIAN GAZETTE, or emblematical representation of a battle. Mr. Thomas, in his "History of Printing in America," first published it, as taken many years since by a French officer. It relates to an expedition of Canadian warriours, who, soon after the settlement of this part of America, took up the hatchet against a hostile tribe that adhered to the English; and is a curious and interesting specimen of the descriptive and imaginative powers of these half-civilized Indians.

EXPLANATION.

This "Indian Gazette Extraordinary" consists of the following figures and emblematick signs cut out upon bark, and was divided into ten different compartments or hieroglyphical paragraphs.

1. Each of the 18 figures represents the number 10, and appears to be somewhat like our 10, only that instead of the unit being *before* the cypher, it *runs through it*. There are eighteen of these figures, and they signify, that 18 times 10, or 180 American Indians took up the hatchet, or declared



AN INDIAN GAZETTE.

war, in favour of the French; which is represented by the hatchet placed over the arms of France.

2. They departed from Montreal, represented by the bird just taking wing from the top of a mountain. The moon and the buck show the time to have been in the first quarter of the buck-moon, answering to July.

3. They went by water, signified by the canoe. The number of huts, such as they raise to pass the night in, shows they were twenty-one days on their passage.

4. They went ashore, and travelled seven days by land, represented by the foot and the seven huts.

5. When they arrived near the habitations of their enemies, at sunrise, shown by the sun being to the eastward of them, beginning (as they think) its daily course. There they lay in wait three days, represented by the hand pointing, and by the three huts.

6. After which they surprised their enemies while asleep. The man asleep represents this; and the twelve figures, that there were 12 times 10, or 120; and the broken roof of the hut, that they broke into their habitations in that manner.

7. They killed with the club eleven of their enemies, indicated by the club and the eleven heads; and took five prisoners captive, shown by the doleful figures on the little pedestals.

8. They lost nine of their own men in the action, represented by the nine heads within the bow, which is the emblem of honour among the American natives; but they had none taken prisoners, (a circumstance to which they attach great honour,) shown by all the pedestals being empty.

9. The heads of the arrows, pointing opposite ways, represent the battle, and the position of the contending parties.

10. The enemy fled; the heads of the arrows, all pointing one way, signify their flight.

HEALTH OF HOP-GROWERS.

Those who have been habitually engaged in hop-growing, have been so uniformly in good health, as to have attracted the attention of medical philosophers. In Burming district, England, in which from three to four thousand people are exclusively employed in the various preparation of hops, there has not been but one death for a long period. Formerly the business was deemed unhealthy; and Mr. Ellis, a very humane gentleman, engaged, at his own personal expense, the services of a physician to be constantly in attendance at East Farley, another famous hop-raising place. So far as observation has been made in the United States, an equal share of good health has been meted out to all grades of hop-growers.

From the Western Monthly Magazine.

SUBSTANCE OF A DISCOURSE ON ELOCUTION,

BY DONALD MACLEOD, A. M.

Delivered before the Western Literary Institute and College of Professional Teachers, at their Fifth Annual Meeting, held in Cincinnati, October, 1835.

(Continued from page 355.)

These facilities, it is believed, are imbodied in the art of elocution, of which an outline is now to be offered. Observe, it is *the* art of elocution, not *an* art, which is proposed. Dr. Whately has, in his valuable works on logick and rhetorick, referred to a just and important distinction between "the art," and "an art." I use the former of these terms as he has explained it, and, when it is applied to elocution, I mean not "a system of principles and rules by the observance of which a man may speak and read well," but "such rules and principles as every good reader and speaker must conform to, whether he has them in his mind or not."* The system aims to point out not how clearness, grace, and energy of expression may be produced, but how they must be produced. It is, in fact, founded upon an analysis, if the expression may be allowed, of the management of the voice, countenance and gesture, by those who succeed in reading and speaking with elegance and effect. Now, if the analysis be correct and philosophical, it is sheer nonsense to talk of the system of practical discipline established upon it, as having a tendency to impart habits of formal and artificial elocution. And to confound this with other systems of a wholly different character, for the purpose of bringing, to bear against it, evidence of failure and imperfection, it is so low and contemptible a species of sophistry, as scarcely deserves to be noticed.

The requisites of perfect elocution, which are set before my pupils as the objects of their labours, are the following:—

I. The elocutionist ought to possess powers of voice and action, capable of expressing every mode, and modification of thought, and emotion, clearly, forcibly, and agreeably.

II. He must fully understand, and thoroughly feel the thoughts, sentiments, and emotions, to which it is his business to give utterance.

III. He must be entirely and exclusively occupied with them at the moment of utterance.

IV. He must have taste to guard against impropriety and extravagance in the use of his powers of expression, so that, in the language of Campbell, the graces may lend their zone to every passion of his breast:—

> "Taste, like the silent dial's power,
> Which, when supernal light is given,
> Can measure inspiration's hour,
> And tell its height in heaven!"

A little reflection will satisfy us, that the prevailing faults are merely deviations, in a greater or less degree, from these requisites. Thus, many persons do not readily apprehend the exact amount and kind of meaning contained in a given passage; and are far from having a proper sensibility to the nature and depth of the emotions of the author. Many others, perhaps the majority of people, find it extremely difficult to give their attention, to the degree required, to the subject-matter; even when the composition is their own; and consequently can experience, at the time of utterance, none of the fervour and earnestness with which they wrote. Their minds are constantly wandering away from the business in hand. They are occupied with speculating as to the opinions their audience is forming of their performance—the sounds of their voices—and too frequently, with mortifying reflections upon their own incompetency to command attention, or elicit applause. And then, so far is the uncultivated voice, which is also frequently unpractised, from being capable of expressing the varieties of thought and emotion with force and beauty, or even the perspicuity necessary, that if we were to select twenty of the most accomplished and erudite men in the community, and ask them to read aloud a piece of animated and diversified composition, of their own—which they might be presumed therefore to understand—we would scarcely find one among them, who could make such transitions in pitch, and employ such inflections, and forms of emphasis, and cadences, as the character of the passage required. Finally, it is not uncommon for those, who possess, by the munificence of nature, or have acquired by practice, considerable powers of voice and gesture, to outrage the taste and understanding of the sensible portion of the audience, by the misapplication or extravagant use of them—or by conceited and affected spouting—for I can give no more dignified name to that species of declamation, which is a mere display of the speaker's powers, however admirable they may be.

The course of instruction, which is proposed as a corrective for these faults, and as the means of acquiring the beforementioned requisites, is founded on the following principles:—

I. That the powers of expression by voice and gesture cannot be improved, nor their improved manifestation rendered habitual, but by frequent and regular exercise.

II. That the subjects about which they are exercised ought to be selected with reference to these powers, accommodated to their condition and progress, and such as are qualified to interest the minds, and encourage the exertions of the students.

III. That the lectures and illustrations of the professor be so composed and adjusted, as to furnish proper materials for exercises in extemporaneous speaking.

IV. That the exercises ought to proceed in a regular series—at the opening of the class, beginning with the merely mechanical practice of the elements of vocal expression and gesture, and proceeding in due time, to the display of these, in the delivery of interesting passages from the works of the poets and orators, and in the expression of the student's own thoughts, on the topicks discussed in the lectures.

It will not be expected that I should on this occasion go into details. Were I to do so, I could not, in the limited time allotted to this discourse, occupy more than a very small portion of a field, that is wide enough to afford ample materials for an entire course of lectures. All I can hope to give you is a general conception of the system. The means of culture are first applied to the voice; and the mode of practical discipline I have adopted, is founded on that recommended by Dr. Rush. While I have availed myself freely of the improvements, which a comparison of other systems in England and this country, and of their diversified results, has suggested, yet I gladly express to Dr. Rush my acknowledgments of obligations, greater than have been conferred upon teachers of elocution, by all other writers on the subject ancient and modern. His well-directed powers of observation and analysis—his patient ingenuity—his great and unwearied industry, have greatly enlarged the boundaries of the science of speech. Or rather, it may be said, in his hands, elocution has assumed, for the first time, the dignity and importance of a science. There is little left to wish for, beyond a scheme of instruction, in which the principles he has established shall be condensed and simplified, and thus rendered more fit for practical use, than they are in his voluminous record. An attempt has been made at this object in the present system. The first stage in the process, is to lay the foundation of a good delivery in habits of clear and correct articulation. This can be done most effectually by practice on the alphabetick elements. After this is accomplished, let the student then proceed to learn successively the five great modifications of the voice; FORCE, PITCH, TIME, QUALITY, and ABRUPTNESS, to which all the varieties of speech may be referred. For the purpose of calling out these powers, and improving them, I know of no method so good as that of practice on the alphabetical element. Let the student then take these, and exercise himself in exhibiting on them, all the varieties of voice which come under the five heads just mentioned. This practice performed regularly, and persevered in, cannot fail to strengthen the general capabilities of the voice, and engraft upon it a facility of acting in every required mode.

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* Whately's Rhetorick. Introduction, sec. 1

In a similar manner the cultivation of gesture ought to be conducted. The simple elements should be first explained and illustrated; and the student should be gradually led on to exercise himself in the display of them, singly and in their most difficult combinations. Let it not be imagined, that this elementary practice has any tendency to produce formality or constraint. In proportion to the accuracy, with which these elementary steps are taken, will the pupil's progress be facilitated, and his final attainments be valuable. It is usual to speak of practice of this sort having a tendency to cramp and fetter the natural powers. But this is not necessarily the case. "Non obstant," says Quinctilian, "hae disciplinæ per illas euntibus, sea circaillis hærentibus." "Such discipline impedes not those who pass through it as an avenue, but only those who linger around it as a resting place." What Sir William Jones said of languages,* I would apply, with a slight modification, to these expressive signs by voice and gesture. They are the mere instruments of elocution, and should not be confounded with elocution itself. But, at the same time, let me press upon you the importance of diligence and accuracy in this stage—making these elements the subjects of strict unwavering attention, and regular animated exercise if you wish to accomplish any thing great in delivery.

After having thus developed and improved, in some measure, his powers of expression, the student is prepared to enter upon the second branch of the business of the course—reading and declamation. In selecting the exercises in these, constant reference should be had to their fitness to interest his mind, and give him a ready command over those resources, which the previous elementary practice has opened up. They should consist, in the first place, of sentences to which the simplest modes of intonation are appropriate; and proceed gradually to passages calling for a more bold and lively expression, and finally to those which demand the highest and most diversified colouring, of which language is susceptible. In this part of the course, the importance of making a close analysis of every passage, that is to be read or recited, with a view to a proper understanding of the character and force of it, must be pointed out, and illustrated. The practice of analyzing composition cannot be too strongly recommended, and insisted upon. It affords an excellent exercise to the faculties of the mind; inasmuch as it requires continual and close reflection and thought, and a vivid state of the imagination and feelings. It is a just remark of a distinguished American writer*—and his testimony is more valuable, because his own genius places him far above the imputation of mortified vanity—that "a man may possess genius without being a perfect reader, but he cannot be a perfect reader without genius."

In this division of the course, also, another most important principle, what has been stated, must be borne in mind. It cannot be too often repeated—I would hazard the danger of wearying the student with line upon line—precept upon precept for the purpose of impressing upon him the importance of fixing his attention, at the moment of utterance, closely and exclusively on the subject-matter. Those who are unaccustomed to read in the presence of others, will at first find it difficult to do this. But it must be done. And every exercise in the class ought to have reference to it; for by practice, all that is desirable in this respect may be attained.—No other qualification will serve the purpose of the elocutionist, if this be wanting. And therefore it becomes so highly important to adopt the system of previous elementary discipline, that has been recommended. No direct attention must be given to rules at the moment of utterance—for just in proportion as the elocutionist does this, he necessarily withdraws his mind from the business in hand, and must therefore fail in real earnestness. It is the more necessary, consequently that we should labour to acquire the power of expression, and make the ready employment of it habitual, for the reason that the manifestation of the power must be spontaneous. The slightest appearance of taking pains about our voice or gesture, would be sure to spoil every thing. No tasteful or sensible audience would tolerate a man, who appeared to be thinking of what tones or motions he should make. To be impressive, he must be IN EARNEST. But this precept is far from implying that he need take no pains at all, as is usual with the sticklers for the NATURAL MANNER. The present system requires the greatest pains to be taken, in order to bring his powers of expression to the highest state of cultivation—because it is only when they have been brought to this condition, that the precept

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* "Languages are the mere instruments of learning, and should not be confounded with learning itself." *Discourse to the Asiatick Society.*

* Rev. Orville Dewey, author of the admirable article on Elocution, in the 64th number of the North American Review.

"be in earnest" can be of any use. He may then be as proudly disdainful, as he pleases, of giving any direct attention to rules and principles; for he will spontaneously conform to those which are important, and he will be natural, too; not as those understand the term on whose lips it is frequently found—but truly natural and truly eloquent.

If our only object were to turn out good readers and declaimers of the compositions of others, we might stop here. But it should be a principal object of a comprehensive scheme of instruction, to impart grace and energy to the manner, in which the pupil expresses his own thoughts and feelings. This cannot, however, be accomplished with perfect success, by the teacher of elocution alone. He must have the co-operation of the professor of rhetorick; for it is to this department, that extemporaneous speaking properly belongs. Still, something may be done towards making the student's own style of expression, conform to the principles of elocution; and with this view, it is recommended, that the lectures and illustrations of the professor be so composed and adjusted as to furnish materials for exercises in extemporaneous speaking. And then, instead of the usual mode of examination, let each student be called upon to give an account, in plain and perspicuous language, of the topicks discussed in the lectures. Let the professor take the subject of PITCH, for instance, and require the members of the class to rise successively in their places, and state their ideas on all the various topicks, which have been lectured upon, under this head. This sort of discipline would tend to make their knowledge of the philosophy of elocution sound and accurate—and habituate them to exemplify, in their own speaking, the most important principles.

In devising this system of instruction, I have had reference, chiefly to our higher seminaries of learning. But it might be adopted, with a few slight modifications, in all our schools. The experience of several years has convinced me, that children cannot be taught to read by any method of tuition, that does not conform to the principles which have been laid down. There is little difficulty in communicating to a boy of the tenderest years all that is necessary to be learned by rule; and every teacher knows, it is infinitely easier to develop and improve the voice and gesticulation of a young person, than of one who has reached maturity of years or intellect. One of the best writers on this branch, who was also a most successful teacher, remarks—that "An infant, just beginning to articulate, uses the inflections most correctly—and has an exact proportion in its cadences, and a speaking expression in its tones. Where are these in maturer years? They have never been put into the hands of the artist, that he might turn them to their proper use. They have been laid aside, spoiled, abused—and, ten to one, they will never be good for any thing."[*] I question whether we shall ever succeed in greatly improving the elocution of our country, unless this branch is taught, as it ought to be, in all our primary schools. The attention of parents and guardians ought to be directed to the subject, and they should take the greatest pains to see that their children read all their lessons, and utter every word they have to say, with distinct enunciation, and in a graceful and forcible manner.

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[*] Mr. Sheridan Knowles, author of "Virginius," &c.

THE WIFE'S PRAYER.

A woman's hand traced the following lines, which only woman's true and fond heart could have inspired.

We hope we may receive other such gems:—

The young wife kneeling to her God,
Seems brighter far in this lone scene
Than when our halls of mirth she trod,
'Mid Fashion's throng, a worshipp'd queen;
Gaze on—the love that fills her heart
New charms hath lent to cheek and brow—
Gaze on—but hush! the pure lips part
Perchance for *thee* she's pleading now:—

"Hear me, thou who markst each feeling,
Thou who knowst each passion's sway;
At the sacred altar kneeling
For a being loved I pray!

"He is dearer than the mother
Who hath been my life's fond guide—
He is 'nearer than a brother,'
Though a brother's still my pride.

"Oft, ere summer's bloom had perish'd
For the *lover's* weal I plead—
Father! on the *husband* cherish'd,
Now thy choicest blessings shed!

"In all 'peril and temptation,'
Guard him with thy holy might:
'Mid the charms of power and station,
Keep a noble spirit bright.

"Bless him, Father! he is starting
Proudly for the goal of fame—
Oh! may every year departing
Add fresh laurels to his name!

"Grant him Genius' inspiration—
Wisdom's eloquence divine—
He is pledged unto a nation,
Let him in her councils shine.

"Be his guide—and for earth's sorrow,
For the blight, the cloud, the thorn,
So prepare him, that each morrow
On a fearless heart may dawn.

"Father! if the love I bear him
Lend his path a brighter ray;
If that love one pang can spare him,
Aid me still to cheer his way.

"Should his manhood's prime be shaded,
Let him on this heart repose—
It will prove, when joys are faded,
Desert spring, and forest rose.

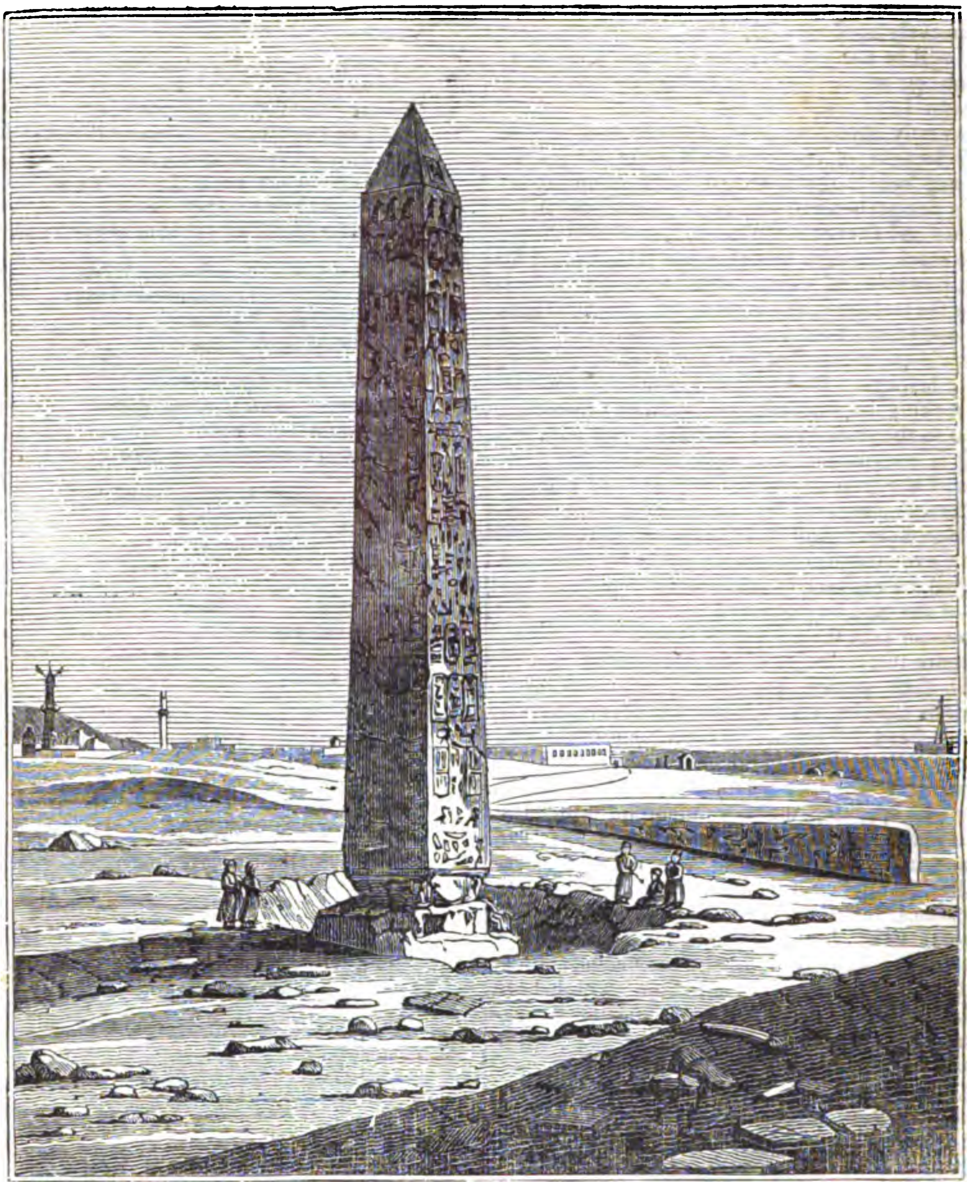
"Strengthen, guard, and guide him ever!
May he glory in love's chain
Till its links thy angel sever—
Ne'er on earth to clasp again."

N. Y. American.

It is curious that some learned dunces, because they can write nonsense in languages that are dead, should despise those that can talk sense, in languages that are living. To acquire a few tongues, says a French writer, is the task of a few years, but to be eloquent in one, is the labour of a life.

Ladies of fashion starve their happiness to feed their vanity, and their love to feed their pride.

EGYPT.



CLEOPATRA'S NEEDLE.

Egypt, a celebrated country of Africa, is about 500 miles in length, and 250 in its greatest breadth. It is bounded on the north by the Mediterranean ; on the east by the Red sea, and the isthmus of Suez; on the south by Nubia; and on the west by Barbary. Egypt is divided into three parts, called the *Upper*, *Middle*, and *Lower*, which last comprehends that part called the Delta. This country is particularly noted for having been the seat of the arts and sciences, from which Greece and other nations received them. The principal cities of ancient Egypt were Memphis and Thebes ; the former stood about 100 miles from the mouth of the river Nile, near the place where Grand Cairo, the present capital, now stands. Thebes, long celebrated for its hundred gates, was seated about two hundred miles above Memphis, below which stood Coptos. Near Memphis, stood the famous pyramids, which have always ranked among the wonders of the world. These buildings are still wonderful ; three of them now remain, and are supposed to be the burial-place of the ancient Egyptian kings. The largest of the pyramids, at the base, covers ten acres of ground, and is above 500 feet in perpendicular heighth and 700 if measured obliquely. The stones with which this enormous edifice is built are thirty feet in length. One hundred thousand workmen were constantly employed for thirty years, in carrying on this amazing structure, during which time, more than two hundred thousand pounds of our money in value was expended for their maintenance.

Near the pyramids stood an enormous sphinx, now almost sunk in the sand, so that the top of its back only is visible : its head rises twenty-seven feet above the sand. The whole of Upper Egypt is described as having been very populous. The government of ancient Egypt was monarchical. Among the natural curiosities of Egypt, the most remarkable is the river Nile, which is described in a separate article. The present population of Egypt is about two millions and a half; and when a Roman province, it is supposed that it contained upwards of seven millions. The French invaded this country in 1798, under Bonaparte, who defeated the Egyptians in several engagements; but after his departure a strong British force arrived to aid the country, and the French were expelled, 1801.

The climate of Egypt is very hot, and in general, unhealthy: rain in this country in summer is considered a phenomenon. The plague frequently visits its inhabitants. But during the autumn and winter, Egypt is considered one of the most delightful and pleasant countries in the world.

Grand Cairo, the capital, is a large and populous city, containing about 300,000 inhabitants. The castle of this place is said to have been built by the celebrated SALADIN, in which are the remains of the most noble monuments; but the greatest part of this once majestick building is now in ruins.

Alexandria, once the seat of learning and royal magnificence, lies now, for the greater part, in ruins. This city was built by Alexander the Great, B. C. 332, and was long the seat and capital of the Ptolemys. According to Josephus, Alexandria was esteemed the finest city in the world, Rome only excepted. At Alexandria was the celebrated library, consisting of 700,000 volumes, which was begun to be collected by Ptolemy Philadelphus, and completed by his successors. This library is said to have been destroyed by the Saracens, at the command of the calif Omar. Alexandria now contains about 6000 inhabitants. The most remarkable antiquities near Alexandria are two obelisks, commonly called Cleopatra's Needles, covered with hieroglyphicks, Pompey's Pillar, and the ancient Tower of Pharos.—Cleopatra's Needles are about 60 feet high, and consist each of a single stone, seven feet square at the base. One of them is now overturned, broken and lying under the sand, the other is represented by the annexed engraving.

Pharos, a watchtower, so celebrated in antiquity, was reckoned one of the seven wonders of the world. It was 400 feet high, and was destroyed by the Turks. Suez, formerly a place of great trade, is now a small town, and gives name to the isthmus that joins Africa to Asia. Near this city, the children of Israel are supposed to have entered the gulf, when they crossed the Red sea. The Egyptians are of a tawny complexion. They display little of that love for science and literature for which their ancestors were so renowned. Here it was that geometry was invented, and it is generally supposed, that it was of the Egyptian priests that PYTHAGORAS acquired the knowledge of the "*True System of the World.*"

ORNITHICNOLOGY.

Independent of written and traditionary testimony, the science of Geology has developed and is continuing to disclose, in its triumphant progress, an almost infallible history of the globe, from the earliest period after its creation through all its multifarious changes and revolutions up to the present time. And it furnishes not only a history of the formation and changes of the earth itself, but it even details to us the character, habits, relative size, and location of its various inhabitants, many of which have been for ages extinct. Not only animals, but even plants are pointed out to us, as belonging peculiarly to the earlier times of our globe.

By some recent investigations, we have been for the first time instructed, that our own country had an antediluvian existence. It is almost clearly shown to us, that in times antecedent to the flood, this very spot of earth maintained a high rank amongst the continents of the globe! That here were hills and woods, sands and floods, beasts, birds, and reptiles. That although it is doubtful whether man had any agency here in those early times, yet, it is sufficiently clear that the race of beasts, birds and reptiles, were of an order as much superiour to the present race, as this present race is superiour to the fabled diminutives of Lilliput! In those palmy days, monstrous *lisards* inhabited the shores of the waters; the giant *mastodon* frolicked through the valleys and meadows, feeding upon the tall luxuriant herbage; and enormous birds inhabited the woods, and fed along the margin of the estuaries and rivers. The enormous bones found far below the surface of the ground in New York, Ohio and Kentucky, and the bird-tracks disclosed in the stone-quarries of the valley of the Connecticut, are convincing evidence of these facts. With the facts in relation to the organick remains of the *melagonyx*, the *lisards*, and the *mastodon*, the reader is already acquainted. We wish now to direct his attention to *ornithicnites* of the Connecticut river valley.

Ornithicnites,[*] signifies *stony bird-tracts;* hence *ornithicnology*, if it may be used to represent a distinct branch of knowledge, signifies the science of stony bird-tracks. The tracks have been observed for twenty years or more; but it was reserved for Professor Hitchcock, of Amherst college, to give them a scientifick investigation, and to him we are indebted for an exposition of its results, and the coinage of the term.

The foot marks in question, have been discovered at various times, in what is called the new red sandstone formation on the banks of Connecticut river, in Massachusetts. The professor's attention was first called to the subject by Dr. Deane of Greenfield, who sent him some casts of impressions on a red micaceous sandstone, brought from the town of Montague, for flagging-stones. They consisted of two

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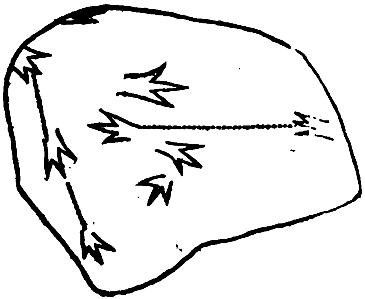
[*] *Ornithicnites*, we are told, is derived from ορνις and τιχνος, two Greek words signifying *stony bird-tracks*. But if the Professor's lexicon contains τιχνος it surpasses ours. We do not perceive whence he derives *stony* tracks. 'Ιχνος is the word for track; and hence *ornithicnites*, means only *bird-tracks*.



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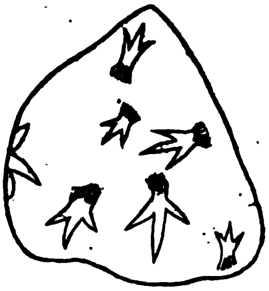

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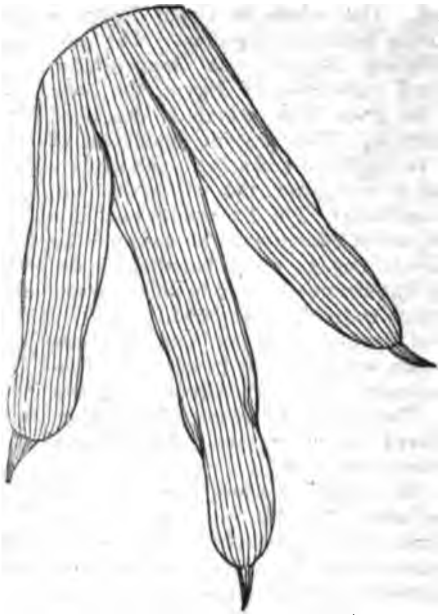

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slabs, originally united face to face ; but on separation, "presenting four most distinct depressions on one of them, with four correspondent projections on the other; precisely resembling the impressions of the feet of a large bird in mud. They were dug from a quarry, less than half a mile from Connecticut river, and elevated above that stream, not more than one hundred feet. The strata there, dip easterly, not more than five degrees ; and the league containing the impressions was several feet below the surface." He afterwards observed them on the flagging-stones in Deerfield and Northampton. He also discovered several distinct varieties of them at a place called the Horserace, also on the east side of mount Tom, in South Hadley, and other places in that vicinity. The strata in which they were found at mount Tom, dipped east about ten degrees, and passed directly under the Connecticut river.

These impressions have been discovered at stone-quarries, in five different places, within the distance of about thirty miles. They "are exhibited on the rock in place, as depressions, more or less perfect and deep, made by an animal with two feet, and usually three toes. In a few instances, a fourth or hind toe, has made an impression, not directly in the rear, but inclining somewhat inward; and, in one instance, the four toes all point forward. Sometimes these ternate depressions run into one another, as the toes approach the point of convergence ; But they also sometimes stop short of that point, as if the animal had not sunk deep enough to allow the heel to make an impression. Nay, at that point the stone is in some cases irregularly raised, as if the weight of the animal had caused the sand or mud to crowd upwards in the rear of the step. In a few instances, also, behind this slight elevation, there is a depression, as if a knobbed heel had sunk slightly into the yielding mass." To some of the tracks there seems to be appended, the impression of stiff hairs or bristles, radiating from the heel. In all cases where there are three toes pointing forward, the middle toe is the longest; sometimes very much so. In the narrow-toed impression, distinct claws are not often seen, although sometimes discoverable. But in the thick-toed varieties, they are often very obvious.—where these impressions occur, the successive layers of the rock may be observed bent downward, often several inches.

These tracks may be traced in succession ; the alternate tracks deviating a little to the right, and the remaining ones to the left, the toes being commonly turned outwards ; and no parellel row of impressions has been observed. This clearly shows them to be the tracks of a biped animal. They correspond so nearly with the tracks of birds, that there can be but little doubt that they are genuine bird-tracks. From the apparent confirmation of the feet, the birds may be assigned to the genus *Grallae* or waders.

Figure 1, represents a confused variety of tracks, found on a specimen of sandstone from the Horserace. Length of the foot varies from four to six inches.

Figure 2, exhibits another specimen from the same place. Some of the feet are six inches, some four inches long. Length of step twelve to eighteen inches. Shown in relief on one side of the stone, and depressed on the other side.

Figure 3, indicates a specimen of the largest impression found :—"Toes three ; length of the foot, fifteen inches, exclusive of the claws. In one specimen, the claw is at least two inches long, and even then a part of it appears to be missing; in general it is not more than one inch, but seems to be broken off. The whole length of the foot, consequently is sixteen or seventeen inches ! Length of the successive steps, between four and six feet ! Average thickness of the toes, one inch and one fourth; breadth of do. two inches." Ten of these tracks have been found in succession, undoubtedly made by the same enormous bird.

"The rock on which one of the species of large track appears, is composed of a fine blue mud, such as is now common in ponds and estuaries; and where the bird trod upon it, in some cases, it seems that the mud was crowded upwards, forming a ridge around the track in front, several inches in height. "Indeed," continues the professor, "I hesitate not to say, that the impression made on the mud appears to have been almost as deep, indicating a pressure almost as great, as if an elephant had passed over it."

All the varieties of tracks are included under two divisions; 1, the *Pachydactyli*, or thick-toed: 2, the *Leptodactyli*, or slender-toed. The first includes three varieties; the second, eight varieties. Some of the slender-toed variety have four toes, with an appendage at the heel, apparently produced by a tuft of hair or feathers not unlike that attached to the foot and leg of the bantam fowl. The footmarks vary in size, from one inch to seventeen inches. We may probably infer from that fact, that they were made by birds of all sizes, varying from that of a snipe, to a species of bird larger than the ostrich.

The ostrich is from seven to nine feet high, and weighs generally about one hundred pounds. The foot of an ostrich is but ten inches long. But the largest of the *ornithicnites*, is from sixteen to seventeen inches long. If this furnishes a fair ground of comparison, we are led to believe that these antediluvian birds, taking also into view the comparative length of the steps, must have been almost twice as high as the ostrich, and, perhaps, twice as heavy!

These impressions were clearly made upon soft earth or mud, at the time, doubtless, when the Connecticut river valley was an estuary. They were gradually filled up by alluvial deposites, and subsequently formed into stone. That they were made at an early period in the history of the globe, will familiarly appear from the fact, that they are found in strata or layers of rock which may be traced directly under hills and mountains, and even beneath the bed of the Connecticut river. But it also appears from the fact, that they are found in strata, the formation of which, geologists attribute to a period antecedent to the flood; or at least antecedent to some great revolution which the earth has undergone since its creation.

Tracks of a similar description have been found in England, in similar geological formations. The organick remains of enormous vegetables have also been found, both in New England and Great Britain, the period of whose existence must be assigned to the same early era in the history of the globe.

We sincerely hope that these investigations may be pursued; for the results will certainly form an important link in that chain of geological evidence, which shall at some subsequent period establish a connected and perfect history of the earth from the beginning.

We should be guilty of great injustice, did we not acknowledge our indebtedness for most of the preceding facts to that most excellent work, *Professor Silliman's Journal.*

CHARACTER OF THE ESQUIMAUX.

The Esquimaux are an extensive race, occupying the shores of the Northern ocean. Richardson and Franklin found them along the whole coast of the American Polar sea; Kotzebue, in the channel near Beering's straits. The Samoiedes and Kamtschatdales, in Northern Asia, are very similar to them in their appearance and manners, as well as in their boats, huts, and instruments.

The form of the Esquimaux seems influenced by the climate; their stature is much lower than the European, five feet nine inches being considered gigantick; the usual height is from four to five feet. Though the trunk of the body is thick, the extremities are small, especially the hands and feet, and the fingers very short. The face is broad and flat, and the nose small, and sunk very deep: this would appear to be caused by the muscles of the face being drawn in from intense cold. The females have a fresh and good-natured expression of countenance. Their dress is very simple. That of the men is of a double coat of deer-skin, with the hair inwards; at one end a hood is formed, and raised over the head; trousers of the same, also double, falling over the boots which extend to the knee, which are of deer-skin or of the hide of the walrus or seal. The dress of the females is very similar; they are, however, distinguished by their boots—so capacious, as to make each leg appear as large as the body, and to give them a waddling gait; these boots form a receptacle for all the nick-nacks that may come into the possession of these fair orders of the north; and, in fact, answer the purpose of a "*reticule*." Captain Parry states, that they were originally used for a receptacle for children, but that of late a new-fashioned hood has been introduced.

Their clothes are sewn together with the thread consisting of the sinews of animals; they arrange their dress with some taste; and from the rich variety of furs, the most showy of which the ladies turn into borders, they, on gala days, make a splendid appearance. But the taste of some was not so good; in lieu of beads they sometimes form ornamental girdles of the teeth of the fox, wolf, or musk-ox; and one, to be finer than the rest, had fringed her jacket with a long row of foxes' noses; these were, however, suspected to be regarded as amulets or charms. To complete their beauty, the women paint their skin by drawing a needle under the epidermis, with a thread dipped in lampblack and oil; and after sewing and drawing out the needle, and pressing the part, it leaves a permanent olive teint.

Hunting is the only resource of these poor people; they pass their whole lives in adventure, which forms a determined character. When not able to procure wood or iron, their ingenuity turns the bones of animals into their implements; and their cord or line is formed by cutting the toughest and most elastick skins into long strips. The short period of summer is employed in shooting the deer with bow and arrow, the flesh of which for eating, and the hide for clothing, they highly esteem. The eider and other wild ducks also furnish them with food, and their skins, with feathers inwards, are used as clothing also. Winter drives all the animals to the south, and then these people are forced to subsist from the products of the river—the seal, the walrus, and the whale—which are obliged to ascend to the surface for respiration. In a solitary snow-shed, erected on purpose, they watch, and immediately the animal is visible, strike a dart or a harpoon with a line attached. When struck, it plunges into the water, but forced to return at intervals, is again attacked, till, by loss of blood, and fatigue, it becomes an easy prey. With a band of dogs, a single Esquimaux will attack a polar bear; the dogs keep him at bay, while the master advancing with a spear, and avoiding with incredible agility the springs of the bear, pierces him repeatedly, till, exhausted, he falls and dies. Nooses, springs, and traps, are also used to catch birds and foxes.

Immediately, a walrus or other sea-monster is taken, shouts are raised throughout the village of huts, when they all come out, and immediately it is brought before them, slices are cut out, and every lamp has a fresh supply of oil; the huts are in a blaze of light; all the pots are filled with the flesh, and the women begin cooking, occasionally picking out a dainty morsel for themselves: the feast is now prepared, when, seated round, one man takes up a large piece, and severs, with his teeth, as much as he can get into his mouth, and then passes it to his neighbour, and so on all round till it is consumed, and a fresh piece is supplied; they will sometimes devour the whole of the animal at one sitting. A youth, named *Toolooak*, is said to have taken in the Fury, within twenty-four hours, ten pounds four ounces of solid food, a gallon and a pint of water, with more than a pint of soup. Captain Lyon, however, thought *Kansara*, another native, possessed more capacity of stomach; in nineteen hours he finished nine pounds fifteen ounces of solid, and a gallon and a half of fluid. Such are the appetites of those people, and so improvident are they, that the most ample stores soon disappear; one day they are labouring under all the evils of repletion, and a few days after they are without food.

Their intellectual faculties are not, of course, much developed; they cannot count beyond ten; and can form no abstract ideas; but in the mechanical structure of their huts and implements, they display great skill; from constantly migrating, they have a good notion of delineating geography; they are very humorous, and fond of mimicking. The first winter they appeared to be honest in the extreme; but, after two or three winters, being accustomed to see pieces of iron, tin-pots, and pieces of wood and planks, lying about, all to them, as gold and jewels to the people of the south, they, by degrees, yielded to the temptation of pilfering; this may, however, in some degree be excused, after they discovered that in their early intercourse with the strangers, skins and furs of great value had been exchanged by them for beads and other articles of little value; for among themselves the greatest integrity appeared to be observed, their sledges and implements of hunting being left outside their huts without any suspicion of their losing any thing. Hospitality was a virtue they also possessed; the strangers from the south were admitted freely into their huts, and the women waited upon them with the greatest attention, setting the best food they had before them, as well as mending and drying their clothes. "The women working and singing, their husbands quietly mending their lines, the children playing before the door, and the pot boiling over the blaze of a cheerful lamp," presents a scene of civilized happiness little imagined to exist in such desolate regions, and cheering in the highest degree to the wandering voyager.

Their religious customs are curious; their principal deity is called *Aywillaiyoo*, being the figure of a female of gigantick stature, having only one eye, (the left,) and a pig-tail reaching to the knees, and so large that both hands can scarce grasp it. Captain Lyon was present when Toolemak, their chief magician, summoned Aywillaiyoo to the upper world to utter her oracles. They were all assembled in a hut, and light after light was extinguished till total darkness prevailed. Toolemak, with incantations, then pretended to descend to the world of spirits to bring up the oracle. Shortly afterwards, a low chant was heard, supposed to be the voice of Aywillaiyoo. For half an hour, screams and questions were uttered by her votaries, and even replied to in mystical answers, after which the sound died away, and she was supposed to disappear, when Toolemak cautiously announced his return to the upper world.

The magician was taken on board one of the vessels, and after being heated with nine glasses of *hot water*, (brandy,) influenced by the spirit, began to act over again; when it appeared by various modes of applying the hand or jacket to the mouth, he produced those sounds which had passed off for the incantations of Aywillaiyoo.

This deity is supposed to have a father, who is a giant with one arm. The Esquimaux also have a more familiar spirit, called *Pamiooli*, a kind of Mercury among them, frequently invoked; they likewise mention a large bear, which they say inhabits the centre of the ice, and sometimes holds converse with them. They, however, believe in a future state, in which as usual among savage nations, they imagine the senses will be completely amused.—They believe that the soul passes through different abodes, first into a state similar to purgatory; that the good spirits pass through them, and find their state continually improving until they reach a spot *where the sun never sets*, and where, with plenty of water, and a beautiful country by the side of lakes which never freeze, the deer roam in vast herds, and the seal and the walrus abound. Such is the perfection of bliss in the imagination of these poor creatures?

WATERSPOUTS.

BY LIEUT. H. W. OGDEN, U. S. N.

"In May, 1820, while on our passage from Havana to Norfolk, in the U. S. sloop of war John Adams, we had reached the latitude of cape Fear, and near the inner edge of the gulf stream, when the wind died away, the weather became very warm, and the atmosphere close and oppressive. The crew were lounging listlessly about the deck, dreading the dull monotony of a continued calm, when one of the seamen called out that there was a waterspout on the larboard bow.

"The officers immediately rushed up from below, and I among the number, but we had scarcely reached the deck before a second and a third were seen, and within half an hour, there were seven around us varying in their distance from the ship from two hundred yards to two miles.

"The atmosphere was filled with low ashy-coloured clouds, some of which were darker underneath than others, and from these the water spouts were generally formed, each one from a separate cloud. In some instances, they were perfectly formed before we observed them, but in others, we could see a small portion of the cloud, at first extend downwards in the shape of an inverted cone, and then continue to descend, not very rapidly, until it reached the water. In other instances, however, we observed that this conical appearance of a portion of the cloud, did not always result in the perfect formation of a waterspout. Several times we saw the cone project, continue for a short time stationary—then rise again slowly and disappear in the clouds. This would in some cases occur two or three times to the same cloud; but eventually a larger and darker cone would descend, and result in forming the visible spout as abovementioned.

"We saw so many of these failures, that the eye very soon became accustomed to that degree of density in the cone which would ensure its descent, and even the sailors became practical philosophers for the time, correctly predicting when a spout would be formed, and when it would fail.

"While intently watching these various operations, we observed that the nearest waterspout, then about two hundred yards on our starboard quarter, was moving slowly towards the ship with a light air from the eastward. The captain immediately ordered the topsails to be clewed down, the hatches to be covered with tarpawlings and battened, the crew to be sent under deck, and directed some of the marines to be in readiness with loaded muskets, to try what effect might be produced by the concussion of firing, as it is the general belief that waterspouts may be broken by this means. As soon as it was near enough, the marines were ordered to fire, and although many of the balls must have passed directly through it, neither the perforation nor concussion had the slightest effect on it. The marines were ordered to load and fire again, and, in the meantime, I was directed to cast loose one of the thirty-two pounders. I did so, and took aim directly at the base of the spout, then within sixty yards, and fired. The captain, and others who were watching the effect to be produced, said they distinctly saw the ball strike the spout at its base, dashing the water on each side, but still it remained as perfect as before. I was ordered to load and fire again, and to elevate the gun so as to strike the tube as high as possible, but just as I was in the act of pulling the lock-string, the captain looked aloft, and observing the head of the spout directly over the main truck, called out to me to hold on, not wishing to try further experiments, while it was in such dangerous proximity to the ship. For some minutes I had been too much occupied with the gun to notice particularly the position and progress of the waterspout, but now, on looking up, I saw the dense black cloud from which it was formed, hanging immediately over us, at a height, as nearly as I could judge, of between three and four hundred feet, and the upper part of the spout directly over the mast-heads. When at a distance of two hundred yards, the tube of the spout seemed to fall perpendicularly from the cloud to which it was attached, but as it approached, the cloud alone moved steadily on, while the lower part of the tube, as though it found something repulsive in the ship, diverged slowly to the southwest, and passed the stern at a distance of about sixty yards.

"This, however, was no doubt caused by a difference in the current of air above and below, and I observed that some of the others, more distant from the ship, would occasionally vary from a perpendicular line and then resume it.

"While the spout was thus moving slowly by us, we had a good opportunity of observing it attentively, and, as we were well convinced that it was not to be broken or dispersed by the concussion of firing, the gun was secured.

"Around the base of the spout for several feet, the sea was considerably agitated, and a few feet above, a gyratory motion was very distinct, tending upward, and accompanied by a whizzing noise, something like that made by a small quantity of steam escaping through a valve which was not very tight.

"The tube of the spout was apparently four or five feet in diameter, and its surface well defined. Its colour was light and misty, but we observed that they all looked darker at a distance than when close to us. Its shape was something like a trumpet, the small end downwards, and spreading out suddenly as it united with the cloud. At a height of between twenty and thirty feet from the water, a number of sea-birds were flying around it, evidently in quest of food. They were in rapid motion, flitting and crossing each other's path at every moment, darting in towards the tube, wheeling away, and then as hastily returning. In the meantime, the cloud above, which had rapidly grown denser and larger, began to exhibit coruscations of electricity. The spout which had passed off to a distance of about three hundred yards, after having been visible more than twenty minutes, became smaller at its lower part, and then gradually rose until entirely lost in the cloud, part of which still hung over us. Soon after this several severe flashes of lightning struck near to the ship, and the rain began to fall in large and very cold drops, some of the sailors who believed that the water was taken up in a body to the clouds, tasted the rain as it fell on the deck, and were very much astonished to find it perfectly fresh. A light breeze now sprang up, bearing the cloud off to the Westward, which, as it passed on, assumed the appearance of a heavy squall, and from its accelerated motion, it was evidently carried on by a strong wind."

After reviewing the different opinions of philosophers as to the formation of waterspouts, Mr. Ogden says; that "the nearest remaining within sixty yards of our ship for at least fifteen minutes, afforded a good opportunity of observing it minutely, and so far as this one (which seemed to be like all the others in sight at the time) can go in confirmation of a general theory, it inclines me to the belief of that part of Dr. Franklin's hypothesis, which supposes it to be a body of warm air rising from the surface of the ocean to the upper and cooler region, where its moisture begins to be condensed into thick vapour by the cold, thus causing the spout to become first visible at its upper end. As the vapours continue to ascend, by constant addition they became denser, and, consequently, their centrifugal force greater, until being risen above the concentrating currents which compose the whirl, they fly off, spread, and form the cloud." *Silliman's Journal.*

There is a paradox in pride—it makes some men ridiculous, but prevents others from becoming so.

BIOGRAPHY.

WILLIAM HARVEY.

The discoverer of the circulation of the blood, was born at Folkstone, in 1578, and educated at Canterbury school. He afterwards went to Caius College, Cambridge. At the age of nineteen he travelled through France and Germany to Padua, where he took the degree of M. D. On his return to England he was incorporated to his doctor's degree at Cambridge, and then settled in London, where he married. In 1604, he was admitted a candidate of the college of physicians; three years after fellow; and in 1615, he made known his *discovery of the circulation of the blood* in his lectures, the MS. of which is preserved among Sir Hans Sloane's papers. It was published in 1628, and dedicated to Charles I., after the ingenious author had, in his lectures, for nine years confirmed and illustrated it, by the most convincing arguments. This discovery produced a wonderful revolution in the practice of physick, and many laid claim to it, Father Paul among the rest; and by some, envious of Harvey's fame, Hippocrates was asserted to be the original inventor. In 1632, Harvey was made physician to the king, (Charles I.,) and shared his dangers at the battle of Edge Hill; and, in consequence of his loyalty, in 1645, he was made warden of Merton college, which the following year he resigned on the surrender of the city to parliament. In 1654, he was chosen president of the college of physicians, but his infirmities were now so great, that he recommended Dr. Prujean for his successor. As he had no family, he honourably made the college his heirs; and after he had built them a combination-room, a library, and a museum, he presented them with the deeds of his estates, and founded the commemoration, which annually, on the 18th of October, records the liberality and merit of its founder. This great man died on the 3d of June, 1657. Under his picture in the college, on a brass plate, is an inscription, which fully commemorates his services and virtues. His works, with a life, were edited by Dr. Lawrence, in 2 vols. 1767.

SCYLLA AND CHARYBDIS.

The poetical genius of Homer has given a degree of importance to the rocks of Scylla, and the whirlpool of Charybdis, which they do not in reality merit; yet no doubt they were, in the infancy of navigation, when the barks were small and frail, and the mariners unskilful, formidable and dangerous obstacles to the passage of the strait of Messina.

Scylla, said in the heathen mythology to have been a beautiful nymph, transformed into a sea-monster by the jealousy of Circe, is, in reality, merely a common rock, on the coast of Italy, and opposite that of Sicily. In its summit is a castle, and on each side a sandy bay. In 1793, an earthquake is said to have destroyed some of the surrounding rocks, and thus lessened the danger, and prevented that extraordinary roaring of the sea in stormy weather, which is said to have resembled the barking of dogs, but is not now observed. Charybdis is a vortex or whirlpool, on the coast of Sicily, opposite to Scylla, and now denominated Galofaro. It is by no means so formidable as represented by the ancients, yet certainly presents a danger not to be despised. It is probably caused by the meeting of several currents, and is sometimes so powerful as to whirl round a man of war, and to place the undecked boats of the country in considerable peril

OPINION OF THE ORIENTALS AS TO WINE.

When Noah planted the first vine, and retired, Satan approached, and said, "I will nourish you, charming plant!"

He quickly brought three animals, a lamb, a lion, and a hog, and killed them one after the other near the vine.

The virtue of the blood of these animals penetrated it, and is still manifest in its growth.

When a man drinks one goblet of wine, he is then agreeable, gentle, and friendly; that is the nature of the lamb.

When he drinks two, he is a lion, and says: "Who is like me?" he then talks of stupendous things.

When he drinks more, his senses forsake him, and at length he wallows in the mire.

Need it be said that he then resembles the hog?

I KNOW THOU HAST GONE.

BY T. K. HERVEY, ESQ.

I know thou hast gone to the house of thy rest,
Then why should my soul be so sad?
I know thou hast gone where the weary are blest,
And the mourner looks up and is glad!
Where love has put off, in the land of its birth,
The stain it had gathered in this;
And hope, the sweet singer that gladden'd the earth,
Lies asleep on the bosom of bliss!

I know thou hast gone where thy forehead is starr'd
With the beauty that dwelt in thy soul,
Where the light of thy loveliness cannot be marr'd,
Nor thy heart be flung back from its goal:
I know thou hast drank of the Lethe that flows
Through a land where they do not forget,
That sheds over memory only repose,
And takes from it only regret.

In thy far-away dwelling wherever it be,
I believe thou hast visions of mine,
And the love that made all things a musick to me,
I have not yet learn'd to resign:
In the hush of the night, on the waste of the sea,
Or alone with the breeze on the hill,
I have ever a presence that whispers of thee,
And my spirit lies down and is still!

Mine eye must be dark that so long has been dim,
Ere again it may gaze upon thine;
But my heart has revealings of thee and thy home,
In many a token and sign.
I never look up with a vow to the sky,
But a light like thy beauty is there—
And I hear a low murmur like thine in reply,
When I pour out my spirit in prayer.

And though like a mourner that sits by a tomb,
I am wrapp'd in a mantle of care—
Yet the grief of my bosom—oh, call it not gloom,
Is not the black grief of despair:
By sorrow revealed, as the stars are by night,
Far off a bright vision appears,
And hope, like the rainbow, a creature of light,
Is born—like the rainbow—in tears.

We devote the activity of our youth to revelry, and the decrepitude of our age to repentance; and we finish the farce by bequeathing our dead bodies to the chancel, which, when living, we interdicted from the church.

SYNOPSIS OF ECCLESIASTICAL HISTORY.

PREPARED FROM THE BEST AUTHORITIES.

A. D.
1. Jesus Christ born in Judea, now called the Holy Land, in the 4004th year of the world.
26. John the Baptist commences his ministry.
29. Christ is baptized by John in the river Jordan.
33. Crucifixion of Jesus Christ, under Pontius Pilate, six weeks after which event, he ascends to heaven.
35. The miraculous conversion, and beginning of the apostleship of St. Paul.
39. St. Matthew writes his gospel.
44. St. Mark pens his gospel.
52. The Apostles assemble in council at Jerusalem.
62. St. Paul bound and sent to Rome.
64. The first persecution of the Christians.
66. The last Jewish war against the Romans commences.
67. Peter and St. Paul suffer martyrdom at Rome by crucifixion, the former with his head downwards.
70. Jerusalem, as foretold by Christ, totally destroyed by the Romans, and the ploughshare driven over its ruins. During this terrible siege, upwards of 3,000,000 of the Jews perished.
95. The second persecution against the Christians.
99. St. John dies, in the 102d year of his age. Prior to this event, he had been cast into a caldron of boiling oil, taken out unharmed, and banished to the isle of Patmos, where he wrote the Revelation.
102. Pliny, the younger, writes his epistle to the emperour Trajan at Rome, informing him of the mode of worship practised by the early Christians. Among other charges, he says, "Solent statu die convenire, et carmina dicere quasi Deo;" i. e., "They were accustomed to assemble on a stated day, and sing hymns to God."
107. Third persecution against the Christians.
118. Fourth persecution against the Christians.
130. The emperour Adrian attempts to rebuild Jerusalem and restore the temple, but his workmen are foiled by earthquakes and fiery eruptions.
202. Fifth persecution against the Christians.
235. Sixth persecution against the Christians.
250. Seventh persecution against the Christians.
257. Eighth persecution against the Christians.
272. Ninth persecution against the Christians.
303. Tenth persecution against the Christians; after which a series of persecutions broke out with the bitterest violence and cruelty.
311. The emperour Constantine becomes a convert to Christianity, and abolishes heathenism from his empire.
325. The first grand council of Nice, in which the Eastern and Western churches were represented.
343. The Christians are persecuted in Persia.
449. The Saxons conquer Britain.
476. The Western empire is abolished.
480. The Roman empire divided into ten horns or kingdoms, and brought under the authority of the pope.
496. Clovis, king of France, is baptized, and embraces the Roman Catholick religion.
516. The computation of time from the birth of Christ, introduced by Dionysius, a monk.
597. Augustine, the monk, goes to England and teaches the Roman Catholick religion
606. The bishop of Rome is ordained the universal head of the church.
622. Mahomet begins to promulgate his religion by the sword.
637. Jerusalem captured by the Saracens.
698. The Picts in Great Britain are converted to Christianity.
748. Middle or dark ages, in which science slumbers, or is confined chiefly to the cloisters.
756. The popes are constituted civil lords in Italy, and arrogantly claim dominion over the whole world.
800. The German empire instituted by Charlemagne, or Charles the Great, the Germans heretofore having been divided into different tribes or separate kingdoms.
878. The university at Oxford founded by Alfred the Great, king of England.
915. The university at Cambridge established.
1065. Jerusalem captured from the Saracens by the Ottomans or Turks.
1065. William, duke of Normandy, conquers England, and takes possession of the throne.
1096. The first crusade to Palestine, or the Holy Land, undertaken by several Christian sovereigns, with the avowed object of recovering Jerusalem and the holy sepulchre out of the hands of the Turks and Saracens.
1110. Revival of literature in the university of Cambridge.
1147. Second crusade to Palestine.
1177. Saladin defeated before Jerusalem. The crusade attended with immense loss of blood and treasure.
1178. The Albigenses and Waldenses, two Christian sects, take their rise in the south of Europe.
1189. Third crusade against the Holy Land, conducted with great fierceness and bravery, under the kings of England and France.
1192. Richard Cœur de Lion, defeats Saladin at Ascalon. The victory, however, is not decisive. The crusades are finally abandoned as not being worth the immense sacrifice of blood and treasure they had already cost.
1215. Magna Charta signed by King John of England.
1233. The Dominican friars get the management of the inquisition into their hands.
1283. The conquest of Wales by Edward the first, king of England.
1369. J. Wicklif commences preaching in England.
1414. The council of Constance assemble.
1415. John Huss and Jerome of Prague are condemned and burnt for their religious opinions.
1509. John Calvin born.
1517. Martin Luther writes against indulgences in Germany, which paves the way for the reformation.
1519. Zuinglius begins the reformation in Switzerland.
1529. The diet of Spires in Germany meet;—the protesting against which gave rise to the name of Protestants.
1533. Henry VIII., of England, renounces his allegiance to the pope, and styles himself the supreme head of the church of England.

1545. The council of Trent convenes.
1555. Michael Servetus burnt at the instigation of John Calvin, at Geneva, for disbelieving the doctrine of the trinity.
1572. Massacre of Bartholomew at Paris, and the slaughter of 70,000 French Protestants by the Roman Catholicks.
1582. Pope Gregory introduces the new style of reckoning time.
1588. Destruction of the Spanish armada, whose manifest intention was the re-establishment of popery in England.
1590. John Knox introduces the reformation in Scotland, and the monasteries of the Roman Catholicks torn down and burnt.
1598. Henry IV., king of France, passes the edict of Nantes, for the benefit of the Protestants.
1618. The synod of Dort, in Holland, held.
1621. The civil war in France, in which many thousands of the Huguenots were slaughtered.

WHY ARE WE RIGHT-HANDED?

Sir Charles Bell on this subject, observes:—"That for the conveniences of life, and to make us prompt and dexterous, it is evident there ought to be no hesitation which hand is to be used, or which foot to be put forward; and that there is, indeed, no such indecision. Is this *taught* us? Or is it from *nature?*" There is a distinction, he says, in the right side of the body; and the left side is weaker, both as to muscular power and its constitutional properties. The development of the organs of motion and action, he adds, is greatest on the right side, as may be proved by measurement, or the opinion of the tailor and shoemaker. This superiority may be said to result from the more frequent use of the right hand. But whence the origin of this use or practice? It has been said, children are taught by parents and nurses to use their right hand: but not always, and not generally, it is believed Besides, this peculiarity is constitutional; disease attacks the left side and members more frequently than the right. In walking behind a person, we seldom see an equalized motion of the body: and we may observe that the step with the left foot is not so firm as with the right; that the toe is not so much turned out in the left, and that a greater push is made with it. From the form of females, and the elasticity of their step, resulting more from the ankle than the hip, the defect of the left foot is still more apparent. We do not see children hop on the left foot. May it not be concluded, then, that every thing (in the conveniences of life) being adapted to the right hand, it is not arbitrary, but is owing to a *natural* endowment of the body, that the right hand is the most strong and best fitted for action? We conclude, therefore, that the preference in using the right hand rather than the left, is not the effect of habit merely, nor adventitious, but is a provision of nature. This theory is not, indeed, universally receivde. The skilful anatomist alone can decide. If there are peculiar properties or mechanism to justify the opinion, it affords a new proof of wise and benevolent design in 'the Former of our bodies,' and of our being "wonderfully made."

As there are none so *weak*, that we may not venture to injure them with impunity, so there are none so *low*, that they may not at some time be able to repay an obligation. Therefore, what benevolence would dictate, prudence would confirm. For he that is cautious of insulting the weakest, and not above obliging the lowest, will have attained such habits of forbearance and of complacency, as will secure him the goodwill of all that are beneath him, and teach him how to avoid the enmity of all that are above him. For he that would not bruise even a worm, will be still more cautious how he treads upon a serpent.

THE DIFFICULTY WITH FRANCE ADJUSTED.

Early in February, the British brig Pantaloon, arrived at Norfolk, bearing an overture of mediation in the misunderstanding between France and the United States, from the British king. The offer of mediation was accepted by our executive, and had also been accepted by France. In accepting the mediation, however, the point, that a foreign nation has a right to demand an explanation of communications passed between different branches of our government, is expressly denied. It is understood that the president's annual message has been deemed satisfactory to France, and that the first instalment will be paid when demanded.

THE MESSAGE.

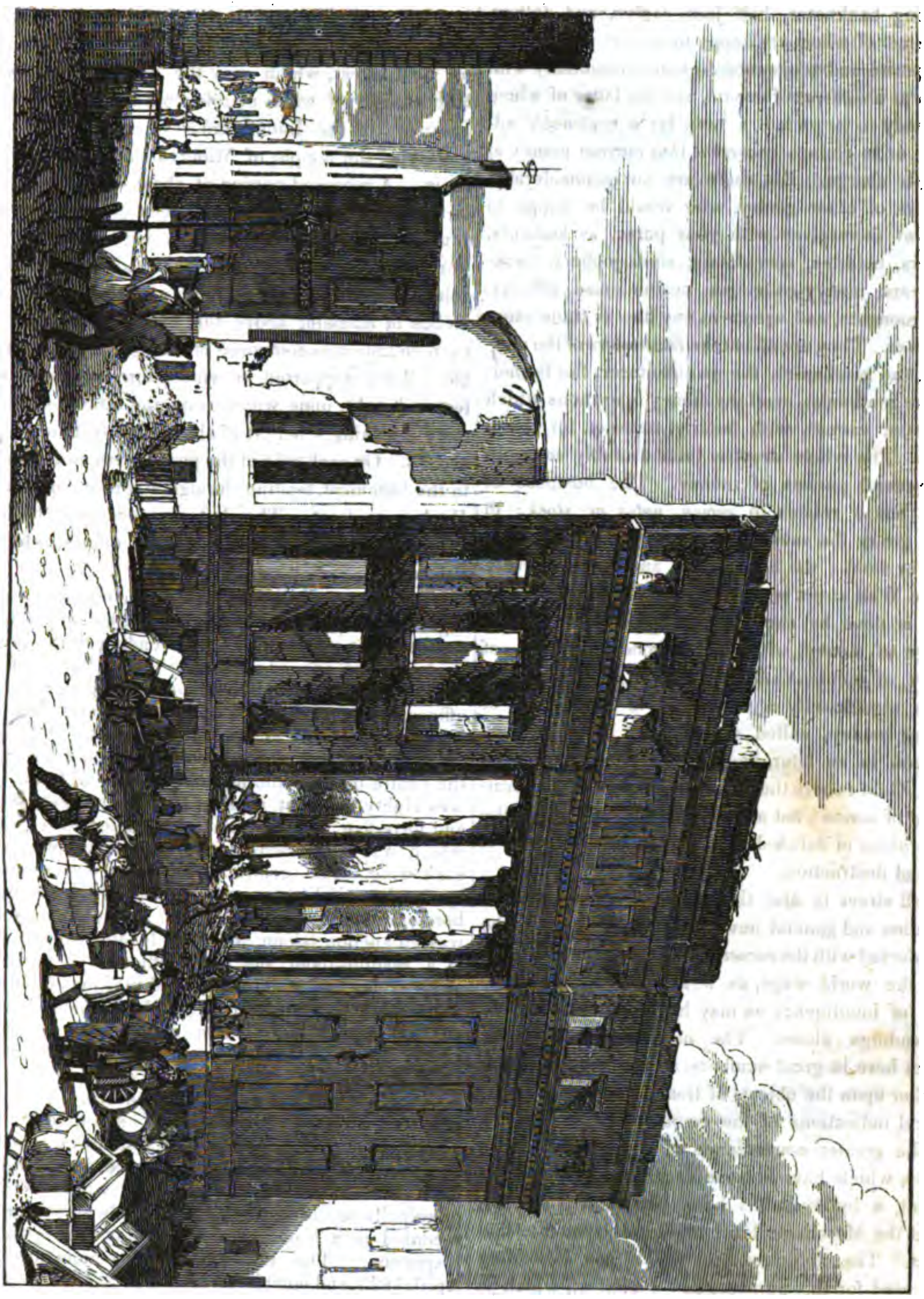
To the Senate and House of Representatives:—

The Government of Great Britain has offered its mediation for the adjustment of the dispute between the United States and France. Carefully guarding that point in the controversy which, as it involves our honour and independence, admits of no compromise, I have cheerfully accepted the offer. It will be obviously improper to resort even to the mildest measures of a compulsory character, until it is ascertained whether France has declined or accepted the mediation. I therefore recommend a suspension of all proceedings on that part of my Special Message of the fifteenth of January last, which proposes a partial non-intercourse with France. While we cannot too highly appreciate the elevated and disinterested motives of the offer of Great Britain, and have a just reliance upon the great influence of that power to restore the relations of ancient friendship between the United States and France, and know, too, that our own pacifick policy will be strictly adhered to until the national honour compels us to depart from it, we should be insensible to the exposed condition of our country, and forget the lessons of experience, if we did not efficiently prepare for an adverse result. The peace of a nation does not depend exclusively upon its own will, nor upon the beneficent policy of neighbouring powers; and that nation which is found totally unprepared for the exigencies and dangers of war, although it come without having given warning of its approach, is criminally negligent of its honour and its duty.

I cannot too strongly repeat the recommendation, already made, to place the seaboard in a proper state for defence, and promptly to provide the means for amply protecting our commerce.

ANDREW JACKSON.

Washington, February, 8, 1836.



RUINS OF THE MERCHANTS EXCHANGE.

THE MERCHANTS EXCHANGE, NEW YORK.

WALL STREET is known, the world over, as the mart of the money-changers in New York. It is, indeed, chiefly filled with bankers and brokers, who rejoice in fingering banknotes, half joes, eagles, and dollars, the former of whom are happy to receive your money on deposite and accommodate you occasionally with a loan at a *moderate* discount, and the latter of whom are ready to negociate a note for a *reasonable* advance, or to change *uncurrent* into current money at a *slight* charge. But there are no inconsiderable numbers of other gentry, who would be happy to acquaint themselves with your purse, as assurers, lawyers, notaries, speculators, stock-jobbers, packet-officers, money-collectors, customhouse officers, news-mongers, and agents in any line or transaction whatever. They are all but the *facilitators* of the merchant, the mechanick, the manufacturer, the farmer, and the gentleman, in all the money operations which the latter cannot, with facility, transact for themselves. The whole street is immeasurably active in the general pursuit of money. The business of every house relates to *money, notes or stock;* in every group the subject of conversation is money, notes or stock; the life, motion, and being, of every man in Wall street is money, notes or stock. Every thing is done by exchange, whether it be an exchange of money, of notes, of bonds, of stock, of estates, of opinions and information, or of nods and winks significantly appertaining to that mode of making money, called *speculation*. Here fortunes are won in an hour, and here too they are lost as soon. Gold is here the beacon of hope, and the mainspring of action; but also too often does it prove the *ignis-fatuus* of deluded adventurers, and the siren of evil and destruction.

Wall street is also the centre of commercial information and general news. Hither all citizens who are infected with the *cacoethus audiendi*, flock, to learn how the world wags, as well as to proclaim such items of intelligence as may have reached their understandings alone. The merchants particularly collect here in great numbers, at mid-day, to confer together upon the objects of trade, and to survey the general indications of the commercial atmosphere. For the greater convenience of these daily assemblages, which have become very necessary and important, a building has been particularly erected, called the Merchants Exchange, and devoted to that object. The noble edifice which has heretofore been used for this purpose, and a plan of which is given overleaf, was destroyed in the great conflagration of the 16th December last. Although a still more splendid structure will soon rise upon its ruins, yet we deem a particular description worth preserving.

The Merchants Exchange was situated on the easterly end of the block formed by Wall, William, Exchange, and Hanover streets, and extended one hundred and sixty-four feet front and rear, and one hundred and fifty feet deep. It was two stories high, besides a basement and an attick. The front on Wall street, which was the principal one, was built entirely of white marble from the Westchester quarries; of the Ionick order of architecture; its prototype, the temple of Minerva Polias, at Priene, Ionia. A recessed portico of about forty feet wide, in an elliptical form, with a screen of four stupendous columns and two *antæ* extending across the front, was very advantageously introduced. These columns were thirty feet high, and three feet four inches in diameter above the base. The shaft of each column was composed of a single block of marble. They supported an entablature of about six feet in height, upon which rests the attick, or third story; making a height of about sixty feet from the ground. On each side of the portico was an entrance to the basement, leading through a sort of corridor to Exchange street. The left was occupied by the Postoffice, and the right by brokers' offices, refectories, &c.

The front entrance to the Exchange was by a flight of stairs, or a dozen broad marble steps, with a pedestal at each end. On ascending to the portico, two doors opened in front to the exchange-room, and two on either hand to ensurance and newspaper offices, while on the right, a flight of stairs also led from the basement to the upper stories. The exchange-room was a spacious and beautiful area, in the centre of the building, and of an oval form. It was eighty-five feet in length, fifty-five feet wide, and forty-five feet high, and surmounted by a dome, which was supported by two Corinthian pillars at each wing. The centre of the room was adorned by that beautiful statue of Hamilton, which we have heretofore particularly described. Beyond this room was an auction saloon, and doors leading from thence to a reading-room and other offices. A flight of stairs at one end of the saloon led into the chambers of the board of trade, of brokers, &c., which occupied the second story. The attick was occupied chiefly by printers and engravers. There were stairs leading from the attick to a cupola, sixty feet in height, which surmounted the edifice. This cupola was of great service, having been used for the purpose of exchanging telegraphick signals with a telegraph at the Narrows, a distance of about eight miles. The observations thus made, and which related principally to the approach of vessels at sea, were recorded in a book below which was kept open for inspection. The Exchange was commenced in April, 1825, and completed in July, 1827. The cost, including the lot, was two hundred and thirty thousand dollars. It now appears like the ruins of a Grecian temple; nothing but its tottering walls remains standing. A much more magnificent structure is now in contemplation, which will cover the whole block.

CHYMISTRY.

OF THE METALS.—MERCURY.

Mercury, or quicksilver, is the only metal which assumes the fluid form at the ordinary temperature of the atmosphere. When cooled to about 40° bebelow 0° of Fahrenheit, a degree of cold which sometimes occurs naturally in very high polar latitudes, it becomes solid. It can also be congealed by artificial freezing mixtures, and the evaporation of sulphuret of carbon in the vacuum of an air-pump. In this state it is malleable, and may be cut with a knife. Its colour is white, but rather bluer than that of silver: its specifick gravity at 47° above 0° is 13.6. It is volatile, and its vapour rises in small quantities, even at the common temperature of the air. At about 660° Fahrenheit, it boils rapidly, and may be purified by distillation.

It is found in nature, in small quantities, in the metallick state; but the ore from which it is chiefly extracted is a sulphuret, commonly known by the name of *cinnabar*.

Its combining proportion, or equivalent number, is known from the analysis of its binary compound, of which we shall proceed to give some account.

SILVER.

Silver is one of the metals which have been longest known to the inhabitants of the earth. It is of a beautiful white colour and great lustre. Its specifick gravity is 10.5, and in malleability and ductility it exceeds all metals except gold. It may be extended into leaves, not exceeding $\frac{1}{10000}$th of an inch in thickness, and drawn into wire finer than a human hair. Its fusing point, measured by Daniell's pyrometer, upon Fahrenheit's scale, is about 2233°. It may be volatilized by a very strong and long-continued heat. When cooled slowly, and the liquid part of the metal poured off, as soon as the surface has congealed, it may be obtained in crystals. Its uses for money and for ornamental articles of luxury are well known, for which purposes it is well adapted by its great inalterability; but it is always alloyed with other metals, and generally with copper. The tarnish which affects it, arises from sulphureous vapours, not from oxydation.

It is found in silver mines, in the metallick state, and also in combination with other metals and with sulphur.

GOLD.

Gold, when pure, is of a yellow colour, and possesses a specifick gravity of about 19.3. It exceeds all other metals in ductility and malleability. It may be beaten into leaves $\frac{1}{280000}$th of an inch in thickness; and a wire of only $\frac{18}{1000}$ths of an inch diameter, will sustain a weight of 150lbs. Its melting point is about 2590° of Fahrenheit's scale. It is perfectly unchanged by fire with access of air, and the intense heat of a glasshouse furnace has no other effect upon it than to keep it in fusion. It is not acted upon by any solvent, except a mixture of muriatick and nitrick acids, or the *aqua regia* of commerce, which is formed by dissolving sal ammoniack in nitrick acid. Its great value for the purposes of coin, when slightly alloyed with other metals, is well known. From its great beauty, inalterability, and lustre, it is also in the highest request for purposes of luxury and ornament. It has hitherto only been found in nature in the metallick state, either pure or in combination with other metals.

PLATINUM.

Platinum, although only found in the metallick state, is, comparatively, but a late discovery. The general appearance of it in a rough state, in which it is brought to this country, is that of small grains or scales, darker than silver, and extremely heavy.

When purified, it is of a white colour, lighter than that of iron, and exceeding all other metals in specifick gravity: it being 21.5, and the most ponderous of all known substances. It is extremely difficult of fusion, but may be melted by a flame urged with oxygen gas. It possesses the valuable property of *welding*; that is to say, at a white heat an incipient fusion takes place, which covers its surface with a kind of varnish, so that when brought into contact in this state, different pieces may be permanently united by forging. In this manner it can be hammered into bars, and afterwards beat out into plates or leaves for different purposes of art. Like gold, it is insoluble in any acid, except the mixture of the muriatick and nitrick.

It has lately been found in Russia in considerable quantities, and employed for the purposes of coin, for which it is well adapted.

From the Western Monthly Magazine.

SUBSTANCE OF A DISCOURSE ON ELOCUTION,

BY DONALD MACLEOD, A. M.

Delivered before the Western Literary Institute and College of Professional Teachers, at their Fifth Annual Meeting, held in Cincinnati, October, 1835.

(Continued from page 390.)

Such are the means of acquiring a correct and energetick delivery, which I have been accustomed to offer to my pupils. And if we now turn to consider the purposes, to which the acquisition may be made subservient, we cannot fail to be struck with its great importance. It is not necessary to pronounce a declamatory eulogium, in order to remind you of the immense utility of eloquence in a country blessed with such free institutions as ours. Lord Brougham recited only its ordinary praises, when he spoke of eloquence as the means whereby justice and innocence might be best defended—useful truths most successfully promulgated from the pulpit—the march of tyranny most effectually resisted—defiance the most terrible hurled at the oppressor's head; and again as the "protector of liberty—patron of improvement—guardian of all the blessings that have been showered upon our race." Nor, as I trust, is it any professional vainglory—any foolish desire to extol and magnify our art—that makes me claim for elocution, the distinction of being the most valuable ally of eloquence. The orator must stand or fall by his delivery! This is a truth equally proclaimed by the collective voice of antiquity, and of modern times Let us look back, for a moment, to the illustrious masters of the art of persuasion in ancient Greece. Whatever difference of opinion may exist as to the comparative excellence, in general literature, of the ancients, and moderns, it is almost universally acknowledged, that the Greeks, were the most successful cultivators of oratory the world has ever seen. It is therefore important to know how surely, among them, the art of delivery was held in the highest estimation. It was a popular art: and there can be no doubt, that the prevailing nice and critical taste for this branch, had a most powerful influence, in bringing their language to its unrivalled excellence in point of structure, and exciting the emulation of their publick speakers, to aim at those rhetorical beauties, which are confessedly superiour to any that are imbodied in language. Their attention was early directed to a careful and scientifick cultivation of the melody of speech. Heaven, indeed, seems particularly to have fitted Greece for the spot, where men should first

> "—— Hear and learn the secret power
> Of harmony in tones and numbers.——"

The fine bodily organization of the people—their delicious climate—and the peculiar associations of their beautiful and romantick country, conspired to make them exquisitely sensible to the power of euphony. "In the land of the cicala and nightingale, each sound was melody; and the softest combinations of articulate expression, were but echoes of the notes, which every zephyr woke along the cliffs of Parnes, or wafted from the bowers of Colonus." It has been well said by a learned and accomplished writer, that, in the language of Greece, sacrifices which no other tongue could afford to make, and which none but Grecian ears would have demanded, are made to this principle of euphony at every turn. "In the formation of the alphabet; in the adjustment of the syllables; in the declension of nouns; the comparison of adjectives; the conjugation of verbs; the origin of dialects; and the arrangement of particles, its prevalence is equally perceptible. Substantives are left irregular; verbs are made anomalous; syntax itself is forced to bend to the demands of *a balanced and musical enunciation*."* And if they gave this minute and anxious attention to the harmony of speech, they had a no less exquisite discrimination and enjoyment of the other qualities of good elocution. To us, the reports of the taste for rhetorical excellence, displayed by an Athenian assembly, appear exaggerated and incredible. Yet no facts are more strongly attested. On occasions even when the greatest interests were at stake, they united the capacities of a board of criticks with the character of a meeting of practical men. At such times, while matters of the most momentous concern were under discussion, every instance of a melodious period, or of striking and significant gesture, in the highly wrought passages of their orators, excited the most lively enthusiasm and applause. On the other hand, no one could hope to gain a hearing—far less to produce conviction, or procure reputation as a speaker—who did not possess a chaste and effective delivery. Demosthenes himself was not listened to, when he first appeared in the tribunal, on account of his deficiency in this respect. And when, after toils which our modern orators would shrink from the thought of undertaking, he succeeded in overcoming his defects—was not his delivery pronounced by Æschines to be a principal part of his eloquence?† This is a familiar instance, and I only refer to it because it enables me at once to answer those, who are continually crying out, that artificial culture must necessarily impart a constrained and formal air. Was Demosthenes less natural or less effective, after having given days and nights of labour to this pursuit? Assuredly not. Highly elaborated and chastened as his oratory was, it was withal eminently practical; and in matter, language, and elocution, full of manliness and simplicity. There was no empty wordiness—no false decoration—no rhetorical sophistry. "A profound and manifest feeling of truth forked the lightnings of that eloquence,"* which

> "—— fulmin'd over Greece
> To Macedon and Artaxerxes' throne!"

And it may be well presumed, that if the ancient criticks had possessed the advantage of that extensive and minute analysis of the modes of speech, which has been given by Dr. Rush, and had thereby been enabled to describe, in terms having a distinct and definite meaning, the peculiar qualities of the great Athenian's manner, when he thundered from the tribunal, we should have derived, from their record of his performances, lessons in elocution, as important as those which his imperishable speeches actually furnish us in composition. It is not to be questioned, that the principal characteristick qualities of his orations would be eminently successful in the hands of a pleader, or parliamentary orator, of the present day; and I have little difficulty in believing, that his manner also was distinguished for those very qualities—clearness, force, and harmony—which captivate, inspire, and control a modern assembly.

This argument in favour of rhetorical delivery, is corroborated by abundant historical and experimental evidence, which the reading and observation of every one may easily furnish. All the great masters of the art of persuasion, among those who use the English tongue, have been indebted, in great measure, for their success, to the aid of elocution. How much of the power of Lord Chatham, and his son William Pitt, may be attributed to their manner! What gave such effect to the accusing eloquence of Sheridan, on the trial of Warren Hastings? Certainly, if we may judge of that celebrated effort by the specimens which have come down to us, it does not appear to have been far beyond the reach of mediocrity; and yet, it was declared by those who heard it, to have eclipsed the most boasted harangues of ancient times. Whence this difference of judgment? It is partly owing, no doubt, to the meager and imperfect reports which were preserved; but in a greater part, to the fact that we have never been under the spell of that animated elocution, which enchanted and ruled the vast assemblage in Westminster Hall.

It would be easy to invest these topicks with interest of another kind, by pointing out the dangers of neglecting this branch. I shall only refer, however, to Addison and Burke—in order to illustrate, how utterly vain and illusory is the notion, that the highest powers of reason can do every thing, and that matter alone, not manner, is to be attended to. Addison could hardly pronounce a sentence of good English, in publick, and Burke was so insufferably dull, that his rising to speak was usually a signal for a general flight of the members to the lobbies and coffee-rooms—a phenomenon which gained for him the derisive title of "dinner-bell to the house of commons." Now, who can doubt that the former of these great men, if he had laboured to overcome his constitutional sensitiveness and timidity, and had prepared himself for appearing in publick, by daily exercises in declamation, might have become an agreeable and persuasive—if not a forcible speaker? or that the gigantick Burke,—

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* Sir Daniel Sandford—Lecture on Greek Literature.

† "What would you have said," observed Æschines, when his recital of his great rival's speech on the crown was received with a burst of admiration—"What would you have said, had you heard *him* speak it?"

* Letters on the Epochs of Literature, by Thomas Campbell.

> "He, on whose name each distant age shall gaze,
> The mighty seamark of those troubled days!
> He, grand of soul, of genius unconfined,
> Born to delight, instruct, and mend mankind
> Burke! in whose breast a Roman ardour glow'd,
> Whose copious tongue with Grecian richness flow'd"

had he adopted a similar course of training, might have swayed the house of commons with more than imperial authority.

In our day and country, it is, above all, important, that he who aspires to take a leading part in publick life, should be an attractive and energetick speaker. Demands are continually made upon men of intelligence and active dispositions, to appear before their fellow-citizens, and give their views and sentiments on matters that concern the general good. Innumerable are the cases, in which the man who is able to stand up and speak his mind, will, in that act, best promote the interest of the state or city in which he lives. It is particularly worthy of the attention of students, that our own most celebrated orators—and we have some who are not surpassed by any in the world—have, on all the great occasions of the display of their eloquence, been distinguished for an animated and impressive elocution. Who, that has ever listened to the tones, in which that accomplished rhetorician, Edward Everett, pours out the most noble sentiments, the most apposite reflections, the most touching appeals to the heart and imagination—or that has ever heard Webster or Clay, in any of their higher passages, will say that their delivery was not a principal part of their eloquence? For myself, in looking back to the memorable scenes of publick business, in which I have beheld the two last-mentioned great men engaged, in the senate of the United States, I can conceive nothing more glorious in declamation, than some of their bursts of eloquence—when look, gesture, tone of voice were such

> "As skill and graceful nature might suggest,
> To a proficient of the tragick scene!"

It will be said, perhaps, that these distinguished persons never paid any systematick attention to our art. It matters not. What it is important we should notice is, that in all their most successful passages, they conform to its principles; and that their defects and imperfections are deviations from those principles. And we have a right to draw the practical inference, that other men of equal talents may, by making their style conform to the same principles, become equally impressive speakers; and that others of inferiour abilities may, still, by a similar process, approach indefinitely near to this excellence. But we stop not here.—Why may we not hope, that by more sedulous training, according to the rules of a comprehensive art of elocution, something may yet be produced not less manly, direct, and energetick, and still more harmonious and highly polished, than what we have been accustomed to consider the finest specimens of American eloquence?

Let me remark, here, that there is one species of oratory very common in our country, to the success of which a proficiency in this branch is absolutely indispensable. I allude to that class of written discourses, comprising eulogies on distinguished men, addresses on great anniversaries, academical discourses, &c., which are either read from the manuscript, or committed to memory and recited. Were the orator, on an occasion of this kind, an accomplished elocutionist, he would be able to combine the peculiar advantages, which belong, respectively to written composition and extemporaneous speaking. His speech might have all that high rhetorical finish, which the most sedulous preparation can bestow; and he would be able to impart to it the most earnest and spirited expression. Though "his fervours" were "a week old," he might give them the appearance of being produced at the moment. This power of delivering written speeches, with an extemporaneous air, is an inestimable acquirement; and, with a view to it alone, the study of elocution deserves the serious attention of all, who may ever be called upon to read discourses in publick.

This observation applies with particular force to those ministers of religion, who are accustomed to read their sermons, or deliver them memoriter. To them, a captivating and imposing delivery is almost every thing. How can a man discharge his duties at the sacred desk, with satisfaction to himself, and advantage to his hearers, if he is unable to read? It is scarcely too much to say, it is more important to the interests of religion, that the clergyman should have a good elocution, than he should possess any extraordinary powers as a writer. Certain it is, at least, that if the Holy Scriptures—and the psalms and hymns—and the service of the Episcopal church, were read properly, with the just and efficient expression of those thoughts and sentiments, which fill the heart of the priest, if he be in a right frame of mind, if they were read so as to make the people *understand* and *feel*, they could not fail to promote the highest ends of the pulpit orator, as effectually as any thing he himself could say.

Besides the purposes of the orator, upon which I have thought it appropriate to dwell, there are others to which a proficiency in this branch may be made equally subservient. It is in the power of a few only to become accomplished orators; but there are numbers who may become agreeable speakers, and almost every one may be taught to read well. And because you cannot hope to reach the foremost rank, will you be therefore content to retain about you all your faults of indistinct articulation, and inexpressive and discordant intonation? Will you take no pains to acquire the power of reading so as to give a high degree of clearness, force, and elegance to your report, as it may be called, of the thoughts, sentiments, and imagery of an author. Where is the intelligent Christian family, that would not find it highly advantageous to possess a good reader in one of its members? How much might he add to the resources of the domestick circle in refined and rational recreation! What more delightful and ennobling gratification can there be of a literary kind, than to contemplate the beauties of our English classicks in that perfectly reflecting mirror which he would be able to set up? And higher ends might be served—the highest ends of wisdom and virtue. Is a moral essay or a sermon to be read or discussed at home? how much more effect will the arguments and exhortations produce upon the mind, when presented in an agreeable and forcible manner, than if they were given by a stiff, languid, and mechanical reader!

But I will not pursue this topick farther. Let me only remark, in conclusion, that it is on grounds of utility I presume to recommend this branch to your favour. For, admirable as elocution is, as a fine accomplishment, and productive as it may be of the no inconsiderable advantage of conferring actual enjoyment of the most refined and ennobling description, I should not have thought of occupying your valuable time so long, if these were its sole or principal advantages. But if the business of a class, conducted on the principles which have been laid down, be faithfully performed, I can assure the student, he will most certainly experience its benefits in the pursuits of science and literature, in discharging the duties of professional and commercial life, and in every situation in which he may be placed.

SYNOPSIS OF ECCLESIASTICAL HISTORY.

PREPARED FROM THE BEST AUTHORITIES.

(Continued from page 400.)

A. D.

1628. Archbishop Laud persecutes the Puritans.—Many escape to Holland, and finally to America.
1649. King Charles beheaded, and the dictatorship under Oliver Cromwell commences.
1659. Oliver Cromwell died.
1660. Charles II., declared king, chiefly by the instrumentality of Gen. Monk, which brings about the restoration of the monarchy.
1662. Act of uniformity in the British parliament, in consequence of which two thousand ministers were rejected from the English church.
1685. Revocation of the edict of Nantes, prohibiting the exercise of the Protestant religion in France.
1688. Revolution of King William III., in which the Stuarts were banished, for endeavouring to regain their lost power, and to introduce popery into England.
1691. The battle of Boyne, in Ireland, in which King William was victorious over James II., and the Protestant religion established in Ireland.
1709. Dr. Sacheveral tried in England, and suspended for high churchism.
1715. Suppression of the rebellion in Scotland, by the defeat of James the Pretender.
1722. Bishop Atterbury banished for having supported the cause of the Pretender.
1722. Young Tching, emperour of China, banished the Jesuits from his dominions.
1733. The Jesuits driven out of Paraguay in South America.
1745. Second rebellion in Scotland extinguished, and the Stuart influence ends.
1757. Damien, a religious fanatick, attempts to assassinate the king of France.
1763. The Jesuits expelled from France for intriguing against the government.
1766. The Jesuits driven out of Bohemia and Denmark.
1767. Their expulsion from Spain, Venice, and Genoa.
1768. They are banished from Naples, Malta, and Parma.
1773. Their society suppressed by the pope.
1775. Commencement of the American revolution.
1776. Declaration of American Independence.
1779. The dissenters in England relieved from many grievances under which they had suffered.
1780. Great riots in London, on account of the design of parliament to extend civil rights to the Roman Catholicks.
1783. Close of the American revolution, and unconditional separation of the colonies from the British crown.
1789. Commencement of the revolution in France, and the reign of terrour, in which religion is overthrown, and thousands of the innocent massacred.
1791. Riots in Birmingham, in which the houses of many dissenters were destroyed.
1793. Louis XVI., king of France, beheaded.
1794. Missions undertaken by the Calvinists, with a view to convert the South-Islanders, and other remote parts of the earth.
1798. Pope Pius VI., dethroned by Bonaparte at Rome, and held in his custody. Bonaparte gets possession of a large amount of his treasures, and gives him to understand that he must renounce his pretensions to supreme authority.
1806. Bonaparte assembles the Jews at Paris, and avows his intention to restore them to their ancient heritage. His plan was not carried into effect, by reason of his subsequent wars with the several nations of Europe, whom he conquered. He, however, abolished the Inquisition.
1813. Statute against the Unitarians in England by the agency of William Smith, member of parliament for Norwich.
1814. The allied powers dethrone Bonaparte, liberate the pope, restore the Bourbons, and proclaim peace and harmony to the world.
1815. Jan. 8th, General Jackson obtains a decisive victory at New Orleans over the British forces under Generals Packenham and Gibbs, and thus triumphantly terminates the second American war.
1818. Commencement of the reign of civil and religious toleration in Connecticut.
1820. George III. of England died, in the 82d year of his age, and George IV. declared his successor.

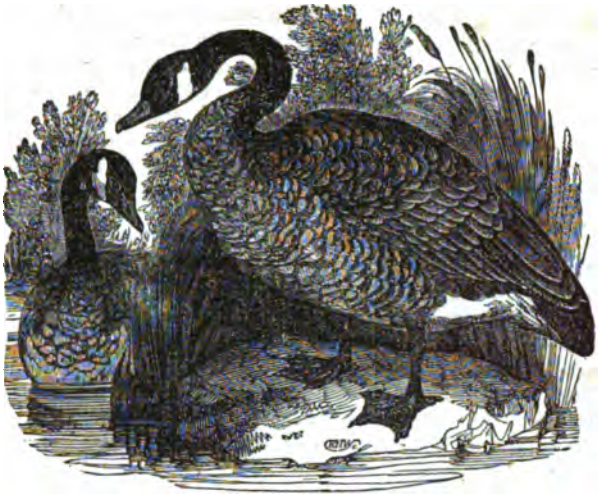
The intermediate period, down to the present time, has been remarkable for peace and religious toleration throughout the world.

1828. General Jackson elected president.
1832. General Jackson re-elected president.

Note.—Several political events have been noticed in the above synopsis, which have had a very important bearing in bringing about a tolerant state of religion among all denominations.

Litchfield Sun.

NATURAL HISTORY.



THE CANADIAN GOOSE.
Anser Canadensis. Ray.

In the genus anser the neck is not so much elongated as in the typical swans, but considerably more so than in the other species of the family; the head is entirely covered with feathers; the bill is as short or shorter than the head, deeper than broad at its base, and narrowed towards its extremity; the nostrils, placed about the middle of the bill, are large, elliptical, and longitudinal; the wings are long, with the first and second quill-feathers longest; the legs are of greater comparative length than in the ducks, and placed so far forwards as to be beneath the centre of gravity; and the hinder toe is never furnished with a membranous fringe. The birds of which this group is composed are popularly known by the name of geese, and are usually intermediate in size between the typical swans and the common duck. They are all migratory in their habits, harmless in their pursuits, easily capable of domestication, and valuable both for their flesh and for their feathers.

The Canadian goose, which we have selected for illustration as a well-marked and interesting species of the group, is somewhat larger than our common domesticated breed. It is also slenderer in its make and especially in its neck, which consequently approaches more nearly to that of the swans. The entire length of the bird is about three feet, and the expanse of its wings rather more than five. The back and wing-coverts are of a dull brown, with a whitish tip to each of the feathers; the quill-feathers of the wings and tail black; the sides pale ashy-brown; and the upper part of the head and neck black, with a broad patch of white spreading from the throat on either side over the lower part of the cheeks. By this latter character, which is extremely obvious, this species may at all times be readily distinguished. Its bill is black; its iris dark hazel; and its legs and feet grayish-black or lead-coloured. There is little or no distinction in plumage between the two sexes.

As the habits of this handsome goose have been observed with more than usual care, and are essentially the same with those of the other species, some little detail on the present occasion may obviate the necessity of recurring to the subject at any future time. Our authorities in this instance will be principally Hearne and Wilson; the one from necessity, and the other from choice, peculiarly attentive observers of the manners of the feathered tribes. Placed in circumstances that compelled him to rely for subsistence mainly and for many years on the produce of the chase, the former naturally acquired an extensive acquaintance with the manners of the animals by which he was surrounded. The latter, impelled by an enthusiastick admiration of nature, devoted all the energies of an active mind to the study of the birds of his adopted country, not merely in the cabinet or the menagerie alone, but in the fields, the forest, and the wilderness; and thus accumulated such a store of information on their native and unrestricted habits as could only have been acquired by the most zealous and unwearied perseverance.—On such observers we rely with implicit confidence. Unfortunately, they are not always to be found; and we then prefer passing lightly over the history of a species to the risk of misleading the reader by the repetition of false or exaggerated statements, which are too often the result of ignorant credulity or of an overheated imagination.

Although commonly known by the name of Canada geese, these birds are by no means confined to that country, but extend their migrations from the lowest latitudes of the United States to the highest parallels that have yet been visited in the northern regions of America. Throughout the whole of this vast extent of territory they are familiarly known, as the harbingers of spring when passing to the north, and the presage of approaching winter on their return. In the United States it is the popular belief that their journeys are bounded by the great chain of lakes, in the islands of which they are supposed to breed; but even on the shores of Hudson's bay they are still found to be proceeding northwards, and they rarely nest further south than 60°. Captain Phipps mentions having seen wild geese at Spitzbergen, in more than 80° of latitude; and Wilson deems it "highly probable that they extend their migrations under the very pole itself, amid the silent desolation of unknown countries, shut out since creation from the prying eye of man by everlasting and insuperable barriers of ice." It is not unlikely that this somewhat flighty passage suggested to a late high-flying projector, the possibility of reaching that long desired goal in a balloon, drawn by wild geese trained for the purpose.

The passage of the geese to the north commences with the breaking up of the ice, their first appearance in Canada and on the shores of Hudson's bay, varying with the forwardness of the spring, from the middle of April to the latter end of May. Their flight is heavy and laborious, but moderately swift, in a straight line when their number is but few, but more frequently in two lines meeting in a point in front. The van is said to be always led by an old gander, in whose wake the others instinctively follow. But should his sagacity fail in discovering the land-marks by which they usually steer, as sometime happens in foggy weather, the whole flock appear in the greatest distress, and fly about in an irregular manner, making a great clamour. In their flights they cross indiscriminately over land or water, differing in this respect from several other geese, which prefer making a circuit by water to traversing the land. They also pass far inland, instead of confining their course to the neighbourhood of the sea.

So important is the arrival of the geese to the inhabitants of these northern regions, that the month in which they first make their appearance is termed by the Indians, as we are informed by Pennant, the goose moon. In fact not only the Indians, but the English settlers also, depend greatly upon these birds for their subsistence, and many thousands of them are annually killed, a large proportion of which are salted and barrelled for winter consumption. Many too that are killed on their return, after the commencement of the frost, are suffered to freeze, and are thus kept as fresh provision for several months. Others, either taken young or wounded, are frequently detained in captivity during the winter. They seldom breed in so low a latitude as Churchill River; but Hearne states that he has occasionally met with their eggs in that neighbourhood. The females rarely lay more than four eggs, but the whole number is generally hatched. They are said usually to select an island in preference to the mainland, for the performance of the maternal office in greater safety.

As soon as the first frosts give notice of the return of the cold season, the geese commence their flight to the south, and arrive on the coast of New Jersey early in October. Here many of them remain during the winter, frequenting the shallow bogs and marshy islands, feeding on the tender green leaves of a marine plant called the sea-cabbage, and on the roots of sedge, which they are frequently observed in the act of tearing up, and making occasional excursions to the beech for gravel. They swim well, and dive to a great distance; but except in very calm weather, rarely sleep upon the water, their roosting-place being mostly in the marshes.

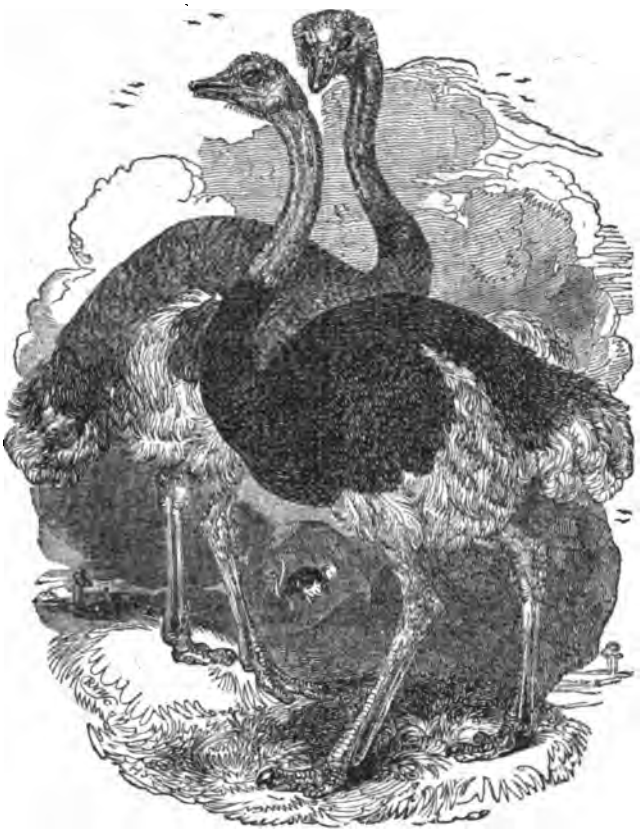
In all their migrations they are marked out for destruction by the hand of man; but the swiftness of their flight and the height to which they soar, render it necessary to resort to stratagem in order to decoy them within gunshot. Pennant gives a very interesting account of the manner in which the Indians lie in wait for them on their arrival, and estimates the number that a good shot may kill on a favourable day as high as two hundred. Some idea may be formed from this of the prodigious numbers that are annually destroyed. In spring they are exceedingly fond of society, and readily fly to the imitation of their call, when they fall an easy prey At their moulting time also, which happens about August, they are taken with great ease; and the birds thus procured, together with their young, are frequently domesticated. In captivity, they readily pair with the common gray goose, and the offspring are said to be larger than either. But on the approach of spring these domesticated birds are always observed to become restless and uneasy, frequently looking up into the air, making attempts to fly away, and hailing every flock of wild geese that passes over their heads. As this salute is usually returned by the flock, who fly towards the well-known sound, the tame geese are commonly made use of as decoys to seduce the wild ones to their destruction.

THE OSTRICH.

Struthio Camelus. Linn.

Unequalled in stature among birds, strikingly peculiar in its form, singular in its habits, and eagerly sought after as furnishing in its graceful plumes one of the most elegant among the countless vanities both of savage and civilized life, the ostrich has always excited a high degree of interest in the minds of the most superficial observers. But far more strongly does this feeling prevail in that of the reflecting naturalist, who does not regard this gigantick bird as an isolated portion of the system of nature, but perceives in it one of those remarkable links in the complicated chain of the creation, too often invisible to human scrutiny, but occasionally too obvious to be overlooked, which connect together the various classes of animated beings. With the outward form and the most essential parts of the internal structure of birds, it combines in many of its organs so close a resemblance to the ruminating quadrupeds as to have received, from the earliest antiquity, an epitaph indicative of that affinity which latter investigations have only tended more satisfactorily to establish. The name of camel-bird, by which it was known, not only to the Greeks and Romans, but also to the nations of the East; the broad assertion of Aristotle that the ostrich was partly bird and partly quadruped; and that of Pliny, that it might almost be said to belong to the class of beasts; are but so many proofs of the popular recognition of a well-authenticated zoological truth.

The ostrich, in fact, is altogether destitute of the power of flight, its wings being reduced to so low a degree of development, as to be quite incapable of sustaining its enormous bulk in the air. Its breastbone is consequently flattened and uniform on its outer surface, like that of a quadruped, offering no trace of the elevated central ridge so generally characteristick of birds, and so conspicuously prominent in those which possess the faculty of supporting themselves long upon the wing. Its legs, on the contrary, are excessively powerful; and are put in motion by muscles of extraordinary magnitude. This muscular power, together with the great length of its limbs, enables it to run with incredible swiftness, and to distance with little exertion the fleetest Ara-



THE OSTRICH.

bian horses. The total want of feathers on every part of these members, and their division into no more than two toes connected at the base by a membrane, a structure not unaptly compared to the elongated and divided hoof of the camel, have always been considered striking points of resemblance between these animals; but there is another singularity in their external conformation which affords a still more remarkable coincidence. They are both furnished with callous protuberances on the chest and on the posterior part of the abdomen, on which they support themselves when at rest; and they both lie down in the same manner, by first bending the knees, then applying the anterior callosity, and lastly the posterior, to the ground. Add to this that, equally patient of thirst, and endowed with stomachs somewhat similar in structure, they are both formed for inhabiting, to a certain extent, the same arid deserts, and it will readily be granted that the affinity between these animals is not so fanciful as might at first be imagined.

The family of birds of which the ostrich forms the leading type, is remarkable for the wide dispersion of its several members; each of them vindicating as it were to itself a distinct portion of the earth. The ostrich, which is spread over nearly the whole of Africa, is scarcely known beyond the limits of the Arabian deserts; while the cassowary occupies its place amid the luxuriant vegetation of the Indian Archipelago. The emeu is confined to the great Australian continent, and the rhea to the southern extremity of the western hemisphere. And finally, the bustard, receding it is true in some particulars from the typical form, still fairly may be regarded as the representative of the family in Europe. Some species, however, belonging to the same group with this latter bird, extend themselves over a considerable portion both of Africa and Asia.

The African ostrich is generally from six to eight feet in height. The lower part of the neck of the male, and the whole of its body, are clothed with broad and short feathers of a deep black, intermingled with a few others which are nearly white and are barely visible except when the plumage is ruffled. In the female, the general colour of the feathers is of a grayish or ashy-brown slightly fringed with white. In both sexes the large plumes of the wings and tail are beautifully white. The bill is of the colour of horn, becoming blackish towards the point. The iris is deep hazel. On the head and neck the hair-down is clear white. In the young bird, these parts, as well as the muscles of the legs, are covered like the rest of the body, with ash-coloured feathers, which fall off after the first year and are not again produced.

The character of the ostrich, like that of other granivorous birds, is extremely mild. It never makes use of its great muscular power to attack, and rarely even in its own defence. It generally has recourse to flight, as its most effectual security against danger; and were its intelligence equal to its velocity, this resource would seldom fail of success. The chase of these birds is accounted one of the most skilful and difficult exercises both for the Arab and his horse, requiring at once the most unwearied patience, and the most reckless impetuosity. The former is absolutely necessary in order to keep them within sight, and to watch their motions, as they wheel round in a circle of greater or less extent, and the latter to seize the favourable opportunity of dashing down upon them in their course and disabling them, which is generally effected by means of a stick thrown with dexterity between their legs. A chase of this kind will frequently last from eight to ten hours. When taken, they evince no ill humour, and after a time, become in some degree docile, suffering themselves to be mounted and ridden like horses. M. Adanson, who had several times witnessed this spectacle in Senegal, declares that even when mounted by two men, they outstripped in speed an excellent English horse. In running they always expand their wings, not, as has been erroneously imagined, to catch the wind in order to assist them in their flight, for they do it indifferently, whether running with or against the wind, but in all probability to counterbalance their great height by the extension of these lateral appendages.

Their natural food consists entirely of vegetable substances, and more especially of seeds and the various kinds of grain, in pursuit of which they frequently commit the greatest devastations among the crops in cultivated countries. But so obtuse is the sense of taste in this bird, that it swallows with the utmost indifference, sometimes even with greediness, whatever comes in its way, whether of animal or mineral origin, partly for the purpose, as it should seem, of distending its stomach, and partly also to assist, like the gravel in the crops of our common poultry, in the trituration of its food. Its fondness for the metals in particular was early remarked, and obtained for it the epithet of "the iron-eating ostrich." Popular credulity even went so far as to assign to it the power of digesting these substances, and many are the illusions in our older writers to this fancied property. As an amusing illustration of the prevalence of this belief, we may quote the following characteristick lines from "The Boke of Philip Sparow," written by Master John Skelton, a laurelled poet of the reign of King Henry the Eighth:—

The estridge that will eate
An horshowe so greate
In the steade of meat
Such fervent heat
His stomake doth freat.

We know not if the ostriches of these days are given to the eating of horseshoes; but unquestionably they have a particular fancy for keys, nails, and other such easily disposed of articles. It would, however, be perfectly ridiculous to imagine that the stomach of this bird is capable of digesting metals and converting them into food, although it is undoubtedly true that after having lain in that organ for a length of time, they become corroded by its juices. M. Cuvier found, in the stomach of an individual that died in the Paris menagerie, nearly a pound weight of stones, bits of iron and copper, and pieces of money, worn down by constant attrition against each other, as well as by the action of the stomach itself. The human stomach, we may add, is equally capable of a similar exertion, although not so frequently called upon to put it to the test. Many of our readers will no doubt recollect the case of an American sailor who died in one of the London hospitals, in 1809, and who had swallowed in the ten previous years no fewer than thirty-five clasp-knives. Fragments of these, to the number of between thirty and forty, thirteen or fourteen of them being evidently blades, were found in his stomach after death. "Some of these," says Dr. Marcet, in his account of the case, "were remarkably corroded and reduced in size, while others were comparatively in a tolerable state of preservation." More than one instance of a similar description has since been put on record.

Although the ostriches live together in large herds, the received opinion among naturalists is that the males attach themselves to a single female.—There is some difficulty in determining the number of eggs laid by the latter; some travellers estimating it as high as eighty, while others reduce it to ten. Of this latter opinion was Le Vaillant, whose authority is decidedly entitled to the highest respect on every subject connected with the habits of birds, which he studied in a state of nature with the scrutinizing eye of a philosopher, and the patient zeal of a scientifick observer. He relates, however, a circumstance which once fell under his own observation, and which tends, in some measure, to reconcile these discordant statements, while at the same time it renders it questionable whether the ostrich is not, occasionally at least, polygamous. Having disturbed a female from a nest containing thirty-eight eggs of unequal size, and having thirteen others scattered around it, he concealed himself at a short distance, and observed during the day that no less than four females successively taking part in the maternal office. Towards the close of the evening a male also took his share of the duty; and Le Vaillant remarks, that he has frequently had opportunities of verifying the fact that the male bird sits as well as the female. In this case it would appear probable that several females had deposited their eggs in one common nest. The extraordinary number of eggs said to have been sometimes found may also perhaps be accounted for by the fondness of the natives for these delicacies, which they abstract from the nest by means of a long stick, cautiously avoiding to introduce their hands, which they affirm would infallibly drive the bird to abandon the place. The ostrich naturally continues laying in order to complete her usual number; and in this way forty or fifty eggs may actually have been obtained from a single female.

Within the torrid zone the eggs are merely laid in the warm sand, the female sometimes sitting upon them during the night; but in general the rays of the sun are sufficiently powerful to hatch them without any assistance on her part. She does not, however, as has been commonly stated, neglect her offspring, but watches over them with as much solicitude as any other bird, hovering around the spot in which they are deposited, and if surprised in her occupation, making a short circuit, and constantly running to the object of her care. This doubling kind of flight is regarded by the hunters as a certain sign of the vicinity of her eggs, as at all other times the ostriches pursue, for a time at least, a direct and straightforward course. In the more temperate regions, and especially in the neighbourhood of the Cape, the ostrich sits like other birds, always choosing the most retired and solitary places. Her nest consists merely of a pit of about three feet in diameter, dug in the sand, which is thrown up around it so as to form an elevated margin. At some little distance are usually placed, each in a separate cavity in the sand, a number of rejected eggs, which are said to be intended to serve as nutriment for the young brood as soon as hatched; a most remarkable instance of foresight, if truly stated, but not yet confirmed beyond the possibility of doubt.

The eggs are extremely hard, very weighty, and twenty or thirty times as large as those of our common hen. The colour of the shells is a dirty white, tinged with light yellow. These are frequently formed into cups; and are used in various ways as ornaments by the natives of the countries in which they are found. The eggs themselves form, according to Thunberg, an article of considerable commerce at the Cape, were they are sold to the vessels that touch there, the thickness of their shells rendering them preferable, for a sea voyage, to those of any other bird. They are generally regarded as great luxuries; but on this point there is some difference of opinion, M. Sonnini affirming that, either from habit or from prejudice, he could not bring himself to consider them so good as the eggs to which he had been accustomed; while M. Cuvier rapturously exclaims, that they are not merely to be regarded as delicacies, but are, in fact, "*ipsissimæ deliciæ;*" an expressive but untranslatable phrase, which we can only render, in piebald English, the ne plus ultra of good eating. It is by no means improbable that, in the latter instance, the rarity of the dish conferred upon it a higher relish than its own intrinsick flavour would have warranted; as was undoubtedly the case when the dissolute Roman emperour, in Rome's degenerate days, ordered the brains of six hundred ostriches to be served up to his guests at a single supper.

The flesh of these birds was among the unclean meats forbidden to the Jews by the Mosaical law. It seems, however, to have been in especial favour with the Romans, for we read of its being frequently introduced at their tables. We are even told by Vopiscus that the pseudo-emperour Firmus, equally celebrated for his feats at the anvil and at the trencher, devoured, in his own imperial person, an entire ostrich at one sitting. It is to be hoped that the bird was not particularly old; for it is allowed on all hands, at least in the present day, that when it has reached a certain age it is both a tough and unsavoury morsel. The young are nevertheless said to be eatable; and we may well imagine that the haunch of such a bird would furnish a tolerably substantial dish. The Arabs, it may be added, have adopted the Jewish prohibition, and regard the ostrich as an unclean animal: but some of the barbarous tribes of the interiour of Africa, like the Struthiophagi of old, still feed upon its flesh whenever they are fortunate enough to procure it.

THE DEMOISELLE, OR NUMIDIAN CRANE.

Anthropoïdes Virgo. Vieill.

THE DEMOISELLE, OR NUMIDIAN CRANE.

The name of Anthropoïdes, conferred upon this genus by its founder, M. Vieillot, owes its origin to a mistaken reading of a passage in Athenæus, which the French academicians of the seventeenth century improperly applied to the bird before us. They regarded the resemblance to man implied by this epithet, as a convincing proof that the otus of the Greeks was a synonyme of the bird which they were themselves describing under the name of demoiselle, from a fancied coincidence between its graceful but somewhat affected attitudes, and the manners of a young and polished female. It is difficult, however, to conceive how these learned men, with M. Perrault at their head, could have stumbled on so gross a misapprehension; for the passages cited by them from Greek and Roman authors prove, beyond all question, that the scops and otus of the former, and the asio of the latter, were, in truth, nothing else than owls, and had consequently no connexion with the Numidian crane.

M. Savigny, on the other hand, refers the latter bird to the crex of Aristotle and other classical authors; but we must confess that we entertain considerable doubt of the accuracy of this opinion also.— The scattered notices of the ancient crex, appear to us by far too scanty and indefinite to admit of their positive appropriation; and they combine, moreover, several traits which are quite irreconcilable with the identity of the two animals. With the exception of this distinguished naturalist, almost all the modern authors who have spoken of the demoiselle have merely copied Buffon, who, with singular inconsistency, at the same time that he corrects the errour of synonymy into which the academicians had fallen, adopts all their quotations founded upon this very mistake. The truth is, that the real history of the bird cannot be traced with certainty beyond the period of M. Perrault's memoirs, in which it was for the first time described under the fanciful denomination which it has ever since retained.

In the Linnæan classification the two remarkable species of which M. Vieillot formed the genus Anthropoïdes, constituted a distinct section of the genus ardea, characterized by their short bills and the crest upon their heads. Modern systematists place them in the family of gruidæ, in an intermediate station between the trumpeters and cranes. They are characterized, according to M. Vieillot, as follows. Their bill is scarcely longer than the head, compressed on the sides, entire at the point, thick, convex, and furrowed above; their nostrils are seated in the furrows of the bill, and are concave, elliptical, and open, but partly concealed.

The elegant species to which the French academicians have given the name of demoiselle is remarkable for the graceful symmetry of its form, the tasteful disposition of its plumage, and the agreeable contrast of its lighter and darker shades of colour. In an upright position it measures, when fully grown, about three feet six inches to the top of the head; and its length from the point of the bill to the tip of the tail, is about three feet. Of these measurements the neck and legs form a very considerable proportion. A patch of light gray occupies the whole of the upper surface of the head, the sides of which, together with the neck, including the long, slender, pointed feathers, which depend from its lower part over the breast, are of a uniform, but not very intense, shade of black.—Every part of the head and neck is fully plumed. Behind each eye there passes off, in a backward direction, a tuft of pure white feathers, three or four inches in length. These crests, as they are improperly termed, are extremely light and flexible, and have their barbs so loose as to float in graceful undulations on the slightest motion of the bird. The rest of the plumage, with the exception of the outer halves of the quill-feathers of the wings and tail, is of a uniform slaty-gray. The secondary quill-feathers are considerably longer than the primary, and when the wings are folded, form on either side of the body a tuft of dependent plumes, curving downwards towards their extremities. All the quill-feathers have their outer halves of a dusky-black. The bill is yellowish or flesh-coloured; the iris reddish-brown; and the legs and claws approaching to black.

Like most of the birds of the wading order, the Numidian crane is migratory in its habits; but it never reaches a high northern latitude, and the environs of Constantinople are the only part of Europe which it is said to visit. It is affirmed, but we know not on what authority, to have been observed as far east as lake Baikal. The southern coast of the Black sea and the Caspian seem, however, to be its proper Asiatick limits. In Africa, which is truly its native country, it extends along the whole of the Mediterranean and western coasts, from Egypt to Guinea, but is most abundant in the neighbourhood of Tripoli, and throughout the tract of country which constituted the Numidia of the ancients. It arrives in Egypt in considerable numbers at the period of the inundation of the Nile; and makes its appearance about Constantinople in the month of October, being then probably on its passage from the Black sea towards the south. It is also stated to have been met with in the interiour of South Africa, in the neighbourhood of the Cape.

Although, in common with the rest of its tribe, it prefers marshy situations, and feeds occasionally upon fishes, insects, and mollusca; a vegetable diet is more congenial to its structure and habits. Its stomach is a true muscular gizzard, like that of the common fowl, and, as in most granivorous birds, contains a quantity of gravel, evidently swallowed for the purpose of assisting in the trituration of the hard substances on which it generally subsists. It consequently prefers seeds and other vegetable productions to every other kind of food. The convolutions of its trachea are less extensive than those of the common crane, and its note is therefore weaker and less sonorous, although somewhat sharper.

The gracefulness of its figure, and the elegance of its deportment, have always rendered this bird an object of peculiar attraction; no living specimens have been brought to this country, and they have been very rare in England and France. Towards the close of the seventeenth century, the menagerie at Versailles contained six individuals which bred there; and one of the young produced in that establishment, lived for four and twenty years. This fact is sufficient to prove that it would not be difficult to acclimate them in the latitude of Paris. They are extremely gentle and good tempered, and speedily become familiarized with captivity, and contented with their condition. It has been remarked that they seem to take pleasure in being noticed and admired, and exhibit themselves on such occasions with a kind of ostentation, making use of gestures which have been construed into bows and courtesies, and jumping about in a kind of artificial dance. To this somewhat overstrained comparison, Buffon adds, that they are so fond of display, as to prefer the pleasure of exhibiting themselves even to that of eating, and to follow those who are on the point of quitting them, for the purpose, as it were, of soliciting another glance of admiration. For our own parts we must confess that we have never observed, in any of the specimens that we have seen, those symptoms of affectation which may perhaps be obvious to a more lively fancy. Their manners appear to us to differ but little in this respect from those of others of their tribe, the only material distinction consisting in the gracefulness with which they execute motions, that in others are not unfrequently awkward and even ludicrous.

THE KANGAROO.

Macropus major. SHAW.

The very peculiar structure from which the Marsupial animals derive their name, has been regarded by almost every naturalist who has written on the subject, as so essential a deviation from the common type, that, setting aside all considerations of form or habits, and regardless even of those technical characters on which so much reliance is usually placed, they have, for the most part, agreed in uniting under the same family designation every animal in which it occurred. This peculiarity consists in a folding or doubling of the skin and its appendages beneath the lower part of the belly in the females, in such a manner as to form an open pouch or bag, in which the young are contained from a very early period, in which the process of suckling takes place, and in which, even for some time after, they have acquired sufficient size and strength to leave it, the little ones continue to take refuge.

But the presence of this one anomalous characteristick is accompanied by so many striking discrepances in other parts, that, limited as this tribe is in number, most of the principal forms of mammalia find analogous representations among its groups.—Thus the opossums exhibit characters in some measure intermediate between the quadrumana and the carnivora, to which latter the dasyuri, another marsupial group, closely resembling the civits in form and habits, approach very nearly; while the herbivorous races of the tribe might occupy a station between the rodent and ruminant orders, with each of which they exhibit various degrees of relationship. This want of uniformity in the essential parts of their organization necessarily gives rise to much difficulty in determining their position in the system. The mode of classification now most generally followed, is, perhaps, under all the circumstances, the best that could at the present be adopted; although it must be owned that the purely herbivorous species arrange themselves with a very ill grace under a subdivision of the order carnivora. Placed, however, as they are at the end of that order, and immediately before the rodentia, the regular gradations from the type of the former to that of the latter, which occur in their different groups, become most distinctly manifest.

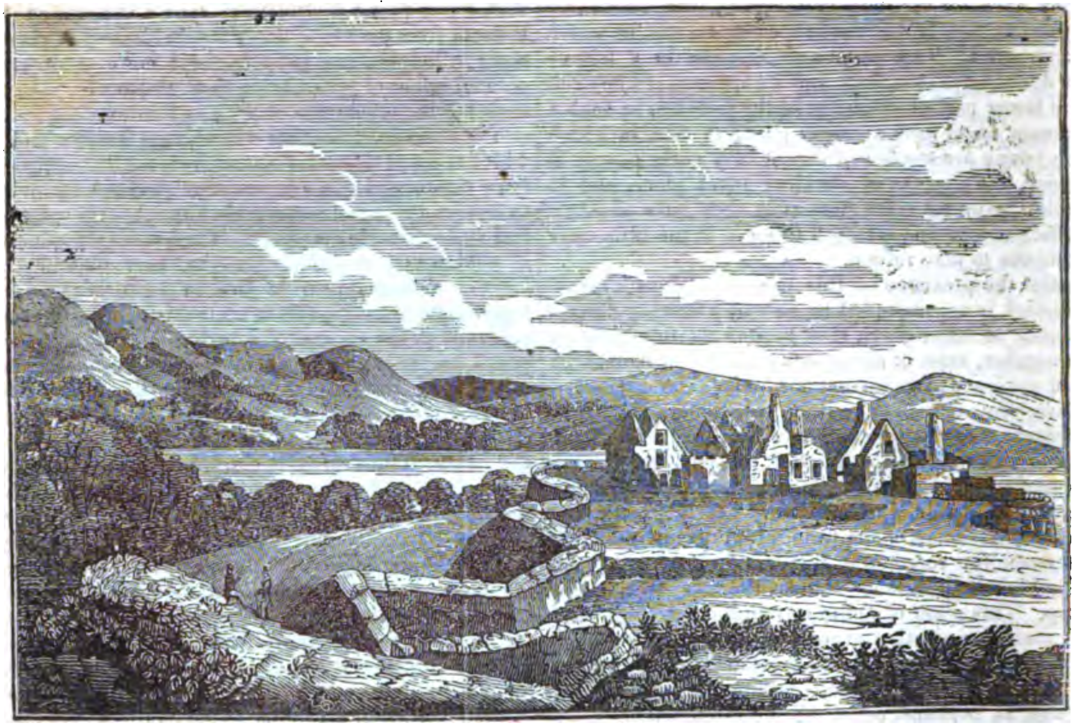
With the exception of the opposssums, which are natives of America, the tribe is peculiar to New Holland and its appendages, and to some of the islands which form the great chain of connexion between that insular continent and Southeastern Asia. The former is, however, their headquarters, and the species which are found beyond its limits are few in number compared with those which people its territory, and, what is more remarkable, people it to the exclusion of nearly all the other mammalia; the dog alone, the universal concomitant of man, and one or two species of rats, disputing with them their title to its exclusive possession; for those paradoxical creatures, the ornithorhynchus and echidna, if really mammiferous, approximate closely in structure to the marsupial tribe.

The largest of these animals are the kangaroos, whose generick characters we shall now proceed to describe. The most remarkable peculiarity in the external form of these animals consists in the extreme disproportion of their limbs, the anterior legs being short and weak, while the posterior are extremely long and muscular. The tail too is excessively thick at its base, of considerable length, and gradually tapering; and this singular conformation enables it to act in some measure as a supplemental leg, when the animal assumes an erect or nearly erect posture, in which position he is supported, as it were, on a tripod by the joint action of these three powerful organs. By means of this combination they will, when flying from danger, take a succession of leaps of from twenty to thirty feet in length and six or eight in height; but even in their more quiet and gradual mode of progression they also make use of their tail in conjunction with their four extremities.

These singular animals were among the first fruits which accrued to natural history from the discovery of New South Wales, a country which has since proved so fertile in new and remarkable forms, both in the animal and vegetable creations. Their natural habits in a wild state, are still, however, very imperfectly known. They appear to live in small herds, perhaps single families, which are said to submit to the guidance of the older males, and to inhabit in preference the neighbourhood of woods and thickets. They are, as might be inferred from the small size of their mouths and the peculiar character of their teeth, purely herbivorous, feeding chiefly upon grass and roots. Their flesh is eaten by the colonists, by whom it is said to be nutritious and savoury, an assertion which is confirmed by those who have partaken of it in England. In order to procure this they are frequently hunted in their native country; but the dogs who are employed in this service sometimes meet with dangerous wounds, not only from the blows of their powerful tail, which is their usual weapon of defence, but also from the claws of their hind feet, with which they have been known to lacerate the bodies of their assailants in a shocking manner. But, unless when thus driven to make use of such powers of self-defence as they possess, they are perfectly harmless and even timid; and, when domesticated, are not in the least mischievous.—When confined in a small enclosure, they uniformly make their path round its circuit, seldom crossing it or passing in any other direction except for the purpose of procuring their food. Their whole appearance, and especially their mode of progression, is singularly curious and to a certain extent even ludicrous.

Modern naturalists have attempted to distinguish several species among the kangaroos; but as the characters on which these are founded consist merely in difference of size and slight modifications of colour, a much more complete acquaintance with them than we yet possess is requisite before they can safely be adopted. Our specimens are of a brownish-gray above, somewhat lighter beneath, with the extremity of the muzzle, the back of the ear, the feet, and the upper surface of the tail, nearly black, and the front of the throat grayish-white. They will feed like the domesticated ruminants, upon green herbage and hay; and may be made extremely tame and good tempered.

As the vine which has long twined its graceful foliage about the oak, and had been lifted by it into sunshine, will, when the hardy plant is rifted by the thunderbolt, cling round it with its caressing tendrils, and bind up its shattered boughs; so it is beautifully ordered by Providence, that woman, who is the mere dependant and ornament of man in his happier hours, should be his stay and solace, when smitten with sudden calamity; winding herself into the rugged recess of his nature, tenderly supporting the drooping head, and binding up the broken heart.—*Irving*.



OLD TICONDEROGA.

A PICTURE OF THE PAST.

In returning once to New England, from a visit to Niagara, I found myself, one summer's day, before noon, at Orwell, about forty miles from the southern extremity of lake Champlain, which has here the aspect of a river or a creek. We were on the Vermont shore, with a ferry of less than a mile wide, between us and the town of Ti, in New York.

On the bank of the lake, within ten yards of the water, stood a pretty white tavern, with a piazza along its front. A wharf and one or two stores were close at hand, and appeared to have a good run of trade, foreign as well as domestick; the latter with Vermont farmers, the former with vessels plying between Whitehall and the British dominions. Altogether, this was a pleasant and lively spot. I delighted in it, among other reasons, on account of the continual succession of travellers, who spent an idle quarter of an hour in waiting for the ferry-boat; affording me just time enough to make their acquaintance, penetrate their mysteries, and be rid of them without the risk of tediousness on either part.

The greatest attraction in this vicinity, is the famous old fortress of Ticonderoga; the remains of which are visible from the piazza of the tavern, on a swell of land that shuts in the prospect of the lake. Those celebrated heights, mount Defiance and mount Independence, familiar to all Americans in history, stand too prominent not to be recognised, though neither of them precisely correspond to the images excited by their names. In truth, the whole scene, except the interiour of the fortress, disappointed me. Mount Defiance, which one pictures as a steep, lofty, and rugged hill, of the most formidable aspect, frowning down with the grim visage of a precipice on old Ticonderoga, is merely a long and wooded ridge; and bore, at some former period, the gentle name of Sugar Hill. The brow is certainly difficult to climb, and high enough to look into every corner of the fortress. St. Clair's most probable reason, however, for neglecting to occupy it, was *the deficiency* of troops to man the works already constructed, rather than the supposed inaccessibility of mount Defiance. It is singular that the French never fortified this height, standing as it does in the quarter whence they must have looked for the advance of a British army.

In my first view of the ruins, I was favoured with the scientifick guidance of a young lieutenant of engineers, recently from West Point, where he had gained credit for great military genius. I saw nothing but confusion in what chiefly interested him; straight lines and zigzags, defence within defence, wall opposed to wall, and ditch intersecting ditch; oblong squares of masonry below the surface of the earth, and huge mounds, or turf-covered hills of stone, above it. On one of these artificial hillocks, a pine tree has rooted itself, and grown tall and strong, since the banner-staff was levelled. But where my unmilitary glance could trace no regularity, the young lieutenant was perfectly at home.—He fathomed the meaning of every ditch, and formed an entire plan of the fortress from its half obliterated lines. His description of Ticonderoga would be as accurate as a geometrical theorem, and as barren of the poetry that has clustered round its decay. I viewed Ticonderoga as a place of ancient strength, in ruins for half a century; where the flags of three nations had successively waved, and none waved now; where armies had struggled, so long ago that the bones of the slain are mouldered; where peace had found a heritage in the forsaken haunts of war. Now the young West-Pointer, with his lectures on ravelins, counterscarps, angles, and covered ways, made it an affair of brick and mortar and hewn stone, arranged on certain regular principles, having a good deal to do with mathematicks but nothing at all with poetry.

I should have been glad of a hoary veteran to totter by my side, and tell me, perhaps, of the French garrisons and their Indian allies, of Abercrombie, Lord Howe and Amherst; of Ethan Allen's triumph and St. Clair's surrender. The old soldier and the old fortress would be emblems of each other. His reminiscences, though vivid as the image of Ticonderoga in the lake, would harmonize with the gray influence of the scene. A survivor of the long-disbanded garrisons, though but a private soldier, might have mustered his dead chiefs and comrades, some from Westminster Abbey, and the English church-yards and battle-fields in Europe, others from their graves here in America; others, not few, who lie sleeping round the fortress; he might have mustered them all, and bid them march through the ruined gateway, turning their old historick faces on me as they passed. Next to such a companion, the best is one's own fancy.

At another visit I was alone, and, after rambling all over the ramparts, sat down to rest myself in one of the roofless barracks. These are old French structures, and appear to have occupied three sides of a large area, now overgrown with grass, nettles, and thistles. The one in which I at, was long and narrow, as all the rest had been, with peaked gables. The exteriour walls were nearly entire, constructed of gray, flat, unpicked stones, the aged strength of which promised long to resist the elements if no other violence should precipitate their fall. The roof, floors, partitions, and the rest of the woodwork, had probably been burnt, except some bars of stanch old oak, which were blackened with fire, but still remained imbedded into the window-sills and over the doors. There were a few particles of plastering near the chimney, scratched with rude figures, perhaps by a soldier's hand. A most luxuriant crop of weeds had sprung up within the edifice and hid the scattered fragments of the wall. Grass and weeds grew in the windows, and in all the crevices of the stone, climbing, step by step, till a turf of yellow flowers was waving on the highest peak of the gable. Some spicy herb diffused a pleasant odour through the ruin. A verdant heap of vegetation had covered the hearth of the second floor, clustering on the very spot where the huge logs had mouldered to glowing coals, and flourished beneath the broad flue, which had so often puffed the smoke over a circle of French or English soldiers. I felt that there was no other token of decay so impressive as that bed of weeds in the place of the back-log.

Here I sat, with those roofless walls about me, the clear sky over my head, and the afternoon sunshine falling gently bright through the window-frames and doorway. I heard the tinkling of a cow-bell, the twittering of birds, and the pleasant hum of insects. Once a gay butterfly with four gold-speckled wings, came and fluttered about my head, then flew up and lighted on the highest tuft of yellow flowers, and at last took wing across the lake. Next a bee buzzed through the sunshine, and found much sweetness among the weeds. After watching him till he went off to his distant hive, I closed my eyes on Ticonderoga in ruins, and cast a dreamlike glance over pictures of the past, and scenes of which this spot had been the theatre.

At first, my fancy saw only the stern hills, lonely lakes, and venerable woods. Not a tree, since their seeds were first scattered over the infant soil, had felt the axe, but had grown up and flourished through its long generation, had fallen beneath the weight of years, been buried in green moss, and nourished the roots of others as gigantick. Hark! A light paddle dips into the lake, a birch canoe glides round the point, and an Indian chief has passed, painted and feather-crested, armed with a bow of hickory, a stone tomahawk, and flint-headed arrows. But the ripple had hardly vanished from the water, when a white flag caught the breeze, over a castle in the wilderness with frowning ramparts and a hundred cannon. There stood a French chevalier, commandant of the fortress, paying court to a copper-coloured lady, the princess of the land, and winning her wild love by the arts which had been successful with Parisian dames. A war-party of French and Indians were issuing from the gate to lay waste some village of New England. Near the fortress there was a group of dancers. The merry soldiers footing it with the swart savage maids; deeper in the wood, some red men were growing frantick around a cog of the fire-water; and elsewhere a Jesuit preached the faith of high cathedrals beneath a canopy of forest boughs, and distributed crucifixes to be worn beside English scalps.

I tried to make a series of pictures from the old French war, when fleets were on the lake and armies in the woods, and especially of Abercrombie's disasterous repulse, where thousands of lives were utterly thrown away; but being at a loss how to order the battle, I chose an evening scene in the barracks after the fortress had surrendered to Sir Jeffrey Amherst. What an immense fire blazes on that hearth, gleaming on swords, bayonets, and musket-barrels, and blending with the hue of the scarlet coats till the whole barrack-room is quivering with ruddy light! One soldier has thrown himself down to rest, after a deer-hunt, or perhaps a long run through the woods, with Indians on his trail. Two stand up to wrestle, and are on the point of coming to blows. A fifer plays shrill accompaniment to a drummer's song; a strain of light love and bloody war, with a chorus thundered forth by twenty voices. Meantime, a veteran in the corner is prosing about Dettingen and Fontenoye, and relates camp-traditions of Marlborough's battles; till his pipe, having been rigorously charged with gunpowder, makes a terrible explosion under his nose. And now they all vanish in a puff of smoke from the chimney.

I merely glanced at the ensuing twenty years, which had glided peacefully over the frontier fortress, till Ethan Allen's shout was heard, summoning it to surrender "In the name of the great Jehovah and of the continental Congress." Strange allies! thought the British captain. Next came the hurried muster of the soldiers of liberty, when the cannon of Burgoyne, putting down upon their stronghold from the brow of mount Defiance, announced a new conquerer of Ticonderoga. No virgin fortress, this! Forth rushed the motly throng from the barracks, one man wearing the blue and buff of the Union, another the red coat of Britain, a third, a dragoon's jacket, and a fuorth, a cotton frock; here was a pair of leather breeches, and striped trousers there; a grenadier's cap on one head, and a broad-brimmed hat, with a tall feather, on the next; this fellow shouldering a king's arm that might throw a bullet to Crown Point, and his comrade a long fowling-piece, admirable to shoot ducks on the lake. In the midst of the bustle, when the fortress was all alive with this last warlike scene, the ringing of a bell on the lake made me suddenly unclose my eyes, and behold only the gray and weed-grown ruins. They were as peaceful in the sun as a warrior's grave.

Hastening to the rampart, I perceived that the signal had been given by the steam-boat Franklin, which landed a passenger from Whitehall at the tavern, and resumed its progress northward, to reach Canada the next morning. A sloop was pursuing the same track; a little skiff had just crossed the ferry; while a scow, laden with lumber, spread its huge square sail and went up the lake. The whole country was a cultivated farm. Within musket-shot of the ramparts lay the neat villa of Mr. Pell, who, since the revolution has become proprietor of a spot for which France, England, and America have so often struggled. How forcibly the lapse of time and change of circumstances came home to my apprehension! Tall trees had grown upon its ramparts, since the last garrison marched out, to return no more, or only at some dreamer's summons, gliding from the twilight past to vanish among realities.

Am. Mon. Magazine.

THE FIVE SENSES.

THE SENSE OF SIGHT. No. VII.—EXPRESSION OF THE EYE.

"He that formed the eye, shall HE not see?"

The emotions of the soul are usually expressed by some corresponding motion of the body; and as the face is peculiarly fitted, by its structure and position, for the manifestation of such mental changes, it forms, in the honest man, a pretty accurate index of his feelings. But this capacity of expression resides chiefly in the eye; which, by its brilliancy, and the extreme delicacy and rapidity of its motions as well as those of its lids and brows, is surprisingly endowed with the capacity of expressing most of the emotions and passions of the soul in the most impressive manner.

The eye is unquestionably the most essential feature of the human physiognomy. It lends the most indispensable charms to beauty, while at the same time it may redeem the most hideous face. It is emphatically the "window of the soul." Into it we gaze for every token of love; there we read the answer to every sympathetick appeal, and then a close discernment may detail almost every movement of the internal machinery. It betrays the softness of piety, the mildness of benevolence, the cowering of guilt, the treachery of an evil heart, and the slumbering fire of the deepest passion. It develops the wildness of insanity, the phrensy of despair, and the gentle patience of hope. Again it displays the gayety and joy of the heart, and the lightness and freedom of the mind.

Head of Antoninus, from the Antique.

Head of Nero, from the Antique.

Poets, in all ages of the world, have celebrated in verse, this eloquence of the eye, and have made us familiar with its more striking aspects; but none have been more successful in their delineations than those of England. Spenser, in describing the suspicion of one of those guilty minds which "fear each bush an officer," has these graphick lines:—

> "Under his eyebrows, looking still askance,
>
> * * * * * *
>
> His rolling eyes did never rest in place,
> But walkt each where for fear of hid mischance."

And again, in his celebrated picture of Despair:—

> ——————"his hollow eyne (eyes)
> Look deadly dull, and started as astound."

Shakspeare's description of the "poet's eye in a fine phrensy rolling," will occur to every one; as also the address of Hamlet to the ghost,

> "There is no speculation in those eyes,"

a line full of the most startling sublimity. But perhaps he has shown an equal power of imagination, with a broader degree of observation, in his lines upon sudden death :—

"But see, his face is black, and full of blood;
His eyeballs further out than when he lived,
Staring full ghastly, like a strangled man."

Milton's *Paradise Lost* abounds with the happiest allusions to this noble faculty. Thus, in a review of the infernal legions, we have the following portrait of their great Satanick leader :—

————————"his face
Deep scars of thunder had intrench'd, and care
Sat on his faded cheek, but under brows
Of dauntless courage, and considerate pride,
Waiting revenge; cruel his eye, but cast
Signs of remorse and passion, to behold
The fellows of his crime, rather
(Far other once beheld in bliss) condemned
For ever now to have their lot in pain."

Of Moloch, "the strongest and fiercest spirit that fought in heaven," it is said on the termination of a speech—

————————"his look denounced
Desperate revenge, and battle dangerous."

And again, on the issue of their deep, malicious councils, when it was determined—

————————"to confound the race
Of mankind in one root, and earth with hell
To mingle and involve"—

we read—

————————"The bold design
Pleased highly those infernal states, and joy
Sparkled in all their eyes."

We turn, however, with pleasure, from these "mighty combatants," to Adam, the object of their forceful subtlety, of whom it is said—

"His fair large front, and eye sublime, declared
Absolute rule;"

a passage which finely illustrates our purpose, and designates the eye as the very soul of expression—the avenue through which the immortal spirit glows.

In the further development of our design, we may mention that Burns was a minute observer of the passions of the eye and has left us some exquisite pictures of its tale-telling propensities. In his address to "Ruin," he says—

"With stern, resolved, despairing eye
I see each aimed dart."

There is an energetick truth in these lines, which nothing can surpass. We turn, however, to our favourite passage in the Cotter's Saturday Night, where the sweet witcheries of love are thus betrayed :—

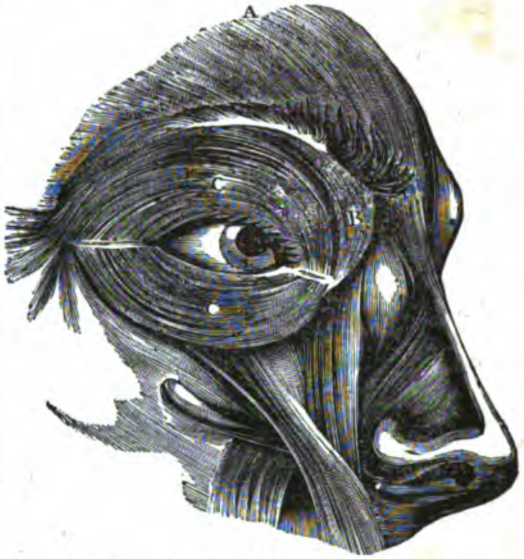
"The wily mother sees the conscious flame
Sparkle in Jenny's ee (eye), and flush her cheek."

One can hardly help sympathizing with the "puir lassie's" confusion.

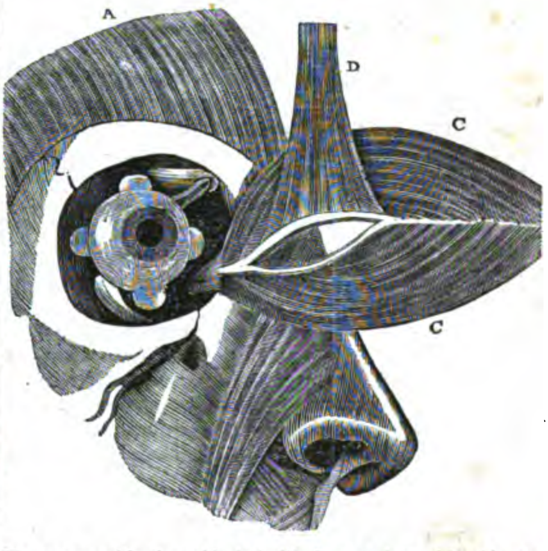
These quotations show how large a share the eye has in the production of beauty, and that which is its most fundamental property, expression. We shall, therefore, conclude this part of our subject, by an extract from a poet who was too much the victim of those soul-subduing glances, of which he was so charming a biographer. Byron, in his dedication of Childe Harold to Ianthe, has the following exquisitely descriptive lines :—

"Oh! let that eye, which, wild as the gazelle's,
Now brightly bold or beautifully shy,
Wins as it wanders, dazzles where it dwells,
Glance o'er this page, nor to my verse deny
That smile, for which my breast might vainly sigh,
Could I to thee be ever more than friend:
This much, dear maid accord; nor question why
To one so young my strain I would commend,
But bid me with my wreath one matchless lily bend."

Expression, when limited to the eye, depends for its production upon the action of four muscles, which we shall presently describe; the motions of the eyeball; the brilliancy of the cornea; and the luminous appearance which the retina assumes, whenever it suffers pressure from a sudden and superabundant influx of blood to its vessels. On such occasions, that delicate organ actually gives out light, and a tender lambent flame seems for a moment to be suffused upon its surface. The same thing occurs in a more concentrated and brilliant form, when the retina



Portion of the face; the skin and fat removed to show the muscles described in the text.



The same with the orbicularis lifted up and turned aside, to show the levator in its natural situation.

is suddenly squeezed by a blow on the front of the eye; or it may be produced at pleasure, by slightly pressing the eyeball from within outwards, when the luminous appearance will be seen in the form of a fiery semicircle. This, as we shall see, has much to do in the expression of strong emotions. The muscles of which we have spoken, are the *occipito frontalis*, the *corrugator supercilii*, the *orbicularis palpebrarum*, and the *levator palpebræ superioris*.

The situation of these muscles will be best understood from the cut. The use of the occipital muscle, A, is to elevate the brows; that of the orbicular, C, to close the eyelids; and that of the levator, to raise the upper lid, and open the eye. By a combination of these muscles in their action, it is obvious that an almost infinite variety of motions would be produced; and it is, consequently, to this simple organization, our inexhaustible power in the indication of passion is to be attributed.

In describing the lineaments of expression, much time and ingenuity has been wasted by those writers who have made it their study to portray them, in vain attempts to classify them, and to reduce to simple rules those effects, which, in every degree, are so compounded, and so intimately related to each other, that the laws laid down for their separation, become only so many names for long lists of nullifying exceptions. It will be our care, therefore, to take untrammelled nature just as we find her, and without confusing the subject by a useless endeavour to drill the differences of expression into regimental order, to content ourselves by the adoption of a plan, which shall show the principal passions in opposition to each other, and by the effect of contrast, make their characteristick differences the more palpable.

1. TRANQUILLITY AND ASTONISHMENT.

In the expression of *tranquillity*, the eye and other features are in a state of repose; it is not, however, such a state of rest as betokens a want of feeling, or which characterizes a face of merely unintelligent prettiness; on the contrary, a susceptibility of expression lurks in the quiet eye, a slumbering energy rests upon the quiet brow, which proclaim the presence of a mind, tranquil, but not asleep, waiting, like the unruffled ocean, the loud lashes of rude winds, to call its latent energies into active existence. There is something very grand in the living and intelligent serenity which seems to swim in the eye of a great man in the calm hours of life.

The antagonist expression is witnessed when the placid eye, roused by some exciting spectacle, withdraws its lids, fixes the ball, enlarges the pupil, elevates the brow, and, all *astonished*, seems athirst to drink in all that can be known of the "great uncommon wonder" then before it.

Terrour is that kind of feeling in which fear treads on the heels of astonishment; the only difference in the expression as it regards the eye, is in a timorous relaxation of the fixed ball, which starts convulsively askance; and in an occasional glare of light from the excited retina. Its general effects are very well described in the following lines:—

> "He answered naught at all: but adding new
> Fear to his first amazement, staring wide
> With stony eyes, and heartless hollow hue,
> Astonished stood."

2. ESTEEM AND CONTEMPT.

When the eye looks graciously upon a valued object, the only difference between it and tranquillity, is, that the lids fall, and, assisted by a suffused tear, give an expression of subdued lustre, which is highly captivating. Its counterpart consists in those blighting looks which tell the scorn of a proud man's heart. On such occasions, the lower lid is drawn up, and covers the under edge of the iris, the brow is arched and elevated, a sarcastick smile plays in little wrinkles round the angles of the lids, and the head being tossed backwards, the pupil is directed downwards, and looks as it were, from on high upon the object of contempt.

3. DESIRE AND AVERSION.

When the soul is disturbed by strong emotions of desire, the eye, as the faithful herald of its feelings, immediately assumes a look of singular intensity. An affectation of humility usually precedes its exhibition, and the moment for witnessing it in full action is, when, raising them from the downcast look of complimentary reverence, they are suddenly fixed on the subject of its wishes. The brows are knit, but drawn forcibly upwards, the lids nearly cover the ball, and the iris, shadowed by their closure, relaxes, and enlarges the pupil, and the whole organ has a strained appearance, with a great deal in the expression produced, which might denote the most anxious curiosity. *Aversion*, in opposition to this, gives to the eye a dull relaxed expression, the brows seem heavy, and a sluggish frown slightly knits them together, the chamber of the eye seems *to gather* darkness, and the ball directed downwards, moves hesitatingly from one object to another without appearing to see any thing.

4. LOVE AND HATRED.

The expressions which designate these passions are the same as the preceding, differing only in excess. Every lineament is more strongly marked. The most perfect examples are to be found in the works of the Italian painters. Pure ethereal love languishes in the eyes of their Madonnas; and hatred, intense in proportion to its injustice, bewilders the vision of their "Scribes and Pharisees."

5. VENERATION AND DESPAIR.

These, being strong affections, are powerfully told by the eye. Prayer has been said to be—

> ——"the lifting of an eye
> When none but God is near."

And it is in the exercise of that ennobling communion we have watched the eyes of the aged and the dying, and beheld veneration in its best and most striking form—the service of the ETERNAL. The eye, under the impulse of the venerating mind, opens broad and beautiful, and with all the stillness of advancing morning, turns itself slowly towards heaven, whose descending light dashes it with a beam of glory;—and thus gazing upon thin air, but "as seeing Him who is invisible"—WORSHIPS. Despair, next to madness, is more strongly expressed by the eye than any other emotion. The burning brows are drawn convulsively together, the retina seems all on fire, the cornea bloodshot, the surface of the ball dry, and the lids swollen, inflamed, and half closed;

degradation reigns; and as the fitful agony returns, the soul avoids the hated light, and seeks darkness to hide its misery.

6. LAUGHTER AND PAIN.

Laughter has been thus described by Sir Charles Bell, in his masterly *Essays on the Anatomy of Expression*, a work which we recommend to universal perusal. "Strongly marked wrinkles play about the eye, and by elevating the cheek, cause it to accumulate upon the eye. In this action, the orbicular muscle assists, while at the same time it presses back the eyeball, so that the eye is nearly closed, and peers through the tears which in hearty laughter flow, in consequence of the pressure of the lachrymal gland. The eyebrows are drawn down, but more generally their outer half is very much curved; while, in consequence of the elevation by which the effect is produced, their inner extremities are pointed downwards; and this is a turn of the eyebrow which never fails to give great drollery and archness to the expression." Pain, in its mildest degree, is indicated by a drawing down of the brows, while tears of sorrow "gush from either eye," and the regular action of the muscles is disturbed by convulsive twitches which accompany the recurring pangs. These expressions change as the pain increases, and in moments of great anguish, the brows are violently elevated, the eyeballs stare, with a wild delirious look, and strong sparkles of light are occasionally emitted from the retina.

7. CONFIDENCE AND JEALOUSY.

Confidence is near akin to placidity in its expression. Vision, however, seems to be more strongly performed, than when the eye merely reposes. An air of animation glistens on the eyeball, and very aptly portrays the open guileless trust of its possessor. Turn we now, to "green-eyed" jealousy, that monster which "makes the meat it feeds on;" and here the agitated mind looks fiercely through the tremulous eye—all is perturbation. The eyelid is fully lifted, and the eyebrows strongly knit, so that the eyelid almost disappears, and the eyeball glares from under the bushy brow.

8. HOPE AND FEAR.

In the expression of hope, some vital impulse seems to leap cheerfully in the buoyant eye; the lids, the brows, and all the parts connected, have an open aspect, and change from grave to gay, from gay to grave, with a more than usual alertness, as the darling hope grows bright or dim by turns. Fear casts a sudden clog upon this elasticity; a shrinking of the parts takes place. The firm open brow suddenly contracts, the smooth expanded forehead becomes wrinkled, the lids collapse, and the eyeballs seem drawn into their orbits; but, upon a fresh accession of alarm, start suddenly forward, and are fixed, with a distracted stare, upon the affrighting cause.

9. SATISFACTION AND ANGER.

When a man is at ease in his possessions, he looks from his lap of luxury with a dosing air, his eyes are half asleep, and a leaden dullness droops upon their falling lids. But, when a good man, in the integrity of his heart, reflects on the widow relieved, the exiled patriot unemployed or the orphan boy apprenticed, a very different look beams in his eye, but still a look of satisfaction; a scanty tear washes away the stain of selfishness, the sight seems to look inwards, and a gentle smile gives life and beauty to the whole expression. Anger, a condemnable and atrocious passion, mars the whole countenance: its distinctive marks may be found in the head of the hyena; the brows are knit, the eyeballs protruded, with a timorous obliquity in their direction, and the whole aspect ugly and revolting.

10. INTELLIGENCE AND MADNESS.

The expression of intelligence may be defined as a promise of good things; the brow is slightly drawn down, bespeaking thoughtfulness; the ball is bright, and the white clear, betokening order and temperance; its motions are steady, proclaiming judgment and self-possession; and, finally, a tendency to smile, declares urbanity and gentle breeding. Sir Charles Bell, in speaking of this expression, says: "How fascinating, when compared with the insipid prettiness, and regular features of an inanimate beauty, is that susceptibility which lightens up the countenance, and plays upon the features of a woman of sensibility, even while she is unmoved by any particular affection."

Madness is various in its expression. In some, the vacant eye of the idiot, leering through a drowsy smile, tells the sad tale; in others, an eye, red with weeping, and dull with imaginary cares, exhibits moonstruck melancholy; and, more sad than all others,

> "With burning eyes, which bloody strokes have stained,
> Staring full wide, and throwing sparks of fire,"

declare the raving mad.

11. ECSTASY AND DEATH.

Violence of degree, in any of the pleasurable passions, may be denominated ecstasy. Thus, there may be an ecstasy of joy, of laughter, or delight; but in every case the effect would be the same in the eye. The ball would swim in the tear of happiness, the lid nearly closed, and the eye strongly compressed; the inner end of the brows drawn down, and the direction of the pupil upwards, so much so, indeed, as frequently to be lost beneath the upper lid.

> "But pleasures are like poppies spread,
> You seize the flower, its bloom is shed:
> Or, like the snow, falls in a river,
> A moment white—then melts for ever."

These raptures have been known to melt the "fairy frostwork" of life, and death has supervened. In this melancholy change, a clammy dulness beclouds the once delighted eye; the living brow, tremulous with emotion, hangs low and flaccid; and the sightless ball, sinking into its rigid bed, marks in ghastly outlines the bony contour of the orbit. In cases less sudden, a look of bewilderment darkens in the eye, and as the poor sufferer raises himself for the last time, the eye turns from one object to another, with an air of anxious delirium, and seems to anticipate the next succeeding minute, when the worn-out frame drops into the embrace of the destroyer.

RAMBLINGS IN WINTER.—No. IV.

"Beshrew you nimble deer."—Scott.

The forests of the valley of the Allegany abound with game. Deer especially, are found in large numbers, with their invariable neighbours, the wolves; now and then an elk is seen, not unfrequently a bear, and rackoons and opossums, with a variety of smaller animals, are as common as the inhabitants of those regions perhaps desire.

As is the case in most newly-settled regions, every able-bodied man is possessed of that necessary, and it may be added, that faithful and unerring friend, the rifle. It is really the heirloom of every family, and essentially their household god. For it is, indeed, their safeguard and security, at all times, against the attacks of an enemy, and a refuge from the encroachments of famine.

In the use of that instrument, I boasted myself not unskilful, and longed for a trial in that excellent school, a *deer-chase*. I was soon to be gratified. A slight snow had fallen, and it being the first of the season, many hunters had been out. As evening approached, they were to be observed in their white hunting-shirts and caps, coming in from all quarters, most of them disappointed, but now and then an individual dragging a victim behind him, or carrying a saddle of venison across his shoulders. A deaf and dumb man held up all his fingers in answer to "How many have you seen?" but he very significantly indicated that they were quickly off. Another individual, more successful, had met a buck attempting to swim the Allegany, and killed him with an axe.

Early in the morning, the preliminaries of cleaning rifles, preparing ammunition, and lining our pockets with luncheon, being completed, a party of four or five of us ventured in pursuit of the noble game. We were not permitted to take hounds with us, under penalty of death to said hounds, and riding on horseback was out of the question in a country of such unmitigated rudeness. We stealthily pursued our course down the river about four miles. There, on the very spot where the busy, the wealthy and magnificent city of Allegany shall rise as by magick touch, we found the feeding-place of a deer, and one of our party struck off upon the trail. We record the fact—shall not a citizen of Allegany city recur to it with amazement and incredulity, five years hence? Several of our party crossed the river here in a skiff, there being a saw-mill in the woods on the opposite side, and pursued a southwesterly course. I soon came upon a fresh trail. Two deer had evidently passed but a short time before me. I eagerly embraced the opportunity of following the tracks, and left the remainder of the party. I moved slowly along, step by step, as slyly as a pilferer, carefully avoiding to make the least noise, optically visiting every nook and corner of the woods at every remove, with a penetration not unworthy of an Argus, and stifling my breath, that nothing should escape my searching eye or listening ear. Nothing was heard in the midst of that awful stillness, but a small woodpecker scratching the bark of a tree, and my *heart* thumping tremendously against the sides of my chest. Hark! There was a bleat! Toho! carefully, not a breath! See! There they are! One is cropping the underbrush, and the other is smelling the moss! One step more, and then—confound that stick! they are off like a flash! But the feverish excitement was subdued, and I brought the rifle to my face with a manly and determined energy; they were nearly one hundred and fifty yards, but the ball sped. The doe is struck! Jehu! What a leap! See them bound away! How noble! How graceful! The very poetry of motion! Alas, they are out of sight.

The gun was quickly recharged, and I in pursuit. I soon discovered that I had hit the mark, for the blood was scattered profusely on the snow, and seemed to indicate a mortal wound. One of our original party joining me, we hurried on stealthily, and as the track grew more and more bloody, and our quarry seemed to be trailing one of her legs, as though her shoulder was broken, we anticipated a *speedy* triumph. The tracks very soon began to indicate a walk, and occasionally a stop; and, whenever the latter occurred, the snow was completely saturated with blood. Still we kept on, and still the game eluded even our sight. My companion spied them once, and fired without effect. Again they bounded away, and on we followed. They led us a chase over hill and through valley; now rising over craggy precipices, now thridding windfalls and ravines; now sliding down a bank, now leaping a log or fording a stream. Still, excited, warm, perspiring, we eagerly hastened on. But one care, one thought, one passion possessed us; the focal object of all our present aspirations was still—ahead. Did we stop to rest? Not we. Had we one thought of the world and all its mazes of care and perplexity? Not we. Had we a care of our bodies and souls, or murmured we at the hollowness of earthly pleasures, and the unsatisfactory results of worldly pursuits? Not we. Our mental and bodily vision, glanced only from the game to the rifle, and from the rifle to the game.—From all things else we were abstracted; in these we were absorbed.

We have heard people talk of the philosophy of deer-hunting. What is it? There *is* philosophy in deer-hunting; but, I opine it is seldom taken into the account of that pseudo-philosophy which some pretend to find, and is too unfrequently carried into practice any where. Deer-hunting *may* develop two of the noblest qualities which appertain to the character of a great man. They are, forbearance, and humility, or rather the mastery of pride. Pride is at the bottom of all the excitements of the chase. It is because a man is elated at the idea of manifesting his superiority, and of asserting his title to the lordship of this nether creation. Perhaps fear, also, operates; since the pride of his superiority elates, and the fear of defeat and its consequences excites. He has an object to accomplish; it is the circumvention of the pretended subjects of his superiority. Here is the timid deer, that flies at his approach, and is fortified with an ear too quick to be liable to abrupt or easy intrusion. And there is, for instance, the cunning fox, the soaring ospray, the cautious yet rapacious feline tribe, the wild horse, the furious and untameable gnu, the sagacious elephant, and the unwieldy whale, and an innumerable variety of other animals, whose wildness, timidity, nature, or cunning, fortify them against the rapacity of each other, and enable them to elude the frequent or easy approach of man. But notwithstanding the various endowments of these animals, man *is* lord over them all. All of them are liable to his approach, and accessible to his hands. And man is proud of it. And because, perhaps, this individual has never felt the reality, he feels elated when an animal is brought to the test, and he begins to realize that he is superiour to all its instinctive cunning and device. His reason has compassed the instinct. Is he satisfied? Does he forbear? No. Too often other passions usurp the place of reason, and he needlessly destroys, lest he should have no testimony of his triumph. A man who can master his pride, will be magnanimous enough to forbear. He will be satisfied in knowing his power, without permitting it to degenerate into reckless tyranny.

In our case, we were so elated with the idea of catching a deer, that for the moment we were unconscious of any thing else. We should doubtless have destroyed, had it been in our power, but we should have done so for the virtue of a saddle of venison. I had possessed the power probably, had I possessed a true gun. At one time a fair broadside-chance presented itself within a hundred yards; my piece was up, and the precious thing snapped! We pursued. All the day long had we tramped through that interminable forest, and still we pursued the track, climbing over, and creeping under, winding and meandering about. We reached a creek as the dusk reached *us*. The deer were still ahead, though they were evidently fatigued, and one of them mortally wounded. But here we permitted our pride to humble itself, our excitement to be subdued, and we had the magnanimity to forbear!

Relinquishing the *dear* chase, pursued we then our course down the creek, supposing it to be the identical stream that carried the saw-mill which we had left in the morning, and that therefore we should find our way home with convenience. But also, we there again predicated too much upon our superiour sagacity. We hurried on, pursuing the circuitous meanderings of that creek, with exemplary patience. We saw numerous Indian "signs," and now and then the ruins of a wigwam. In several places we observed deer had been killed by the Indians; the usual indications were the antlers and haunches hung upon a staddle. It is a singular fact, that the Indians frequently leave for the birds of prey, those parts of the deer, which the whites hold in the highest estimation. The darkness grew intense, and still we pressed on; not, however, without an intrusive thought occasionally relative to "camping out." We were frequently thrown into troublesome dilemmas, and grievous embarrassments, in consequence of the extreme darkness, from which nothing but extraordinary elasticity, great patience and long suffering could ever have extricated us. To "run a muck" up to your waist in mud and mire in a cold dark night, in the midst of a wilderness, is a grievous embarrassment. To fall headlong from the prostrate trunk of a tree into a quadrangular log pen of formidable height, formed by the various *interlockutory* proceedings of a windfall, in a similar night and in a similar wilderness, is to fall into a troublesome dilemma. To be screamed at by a wildcat in times and circumstances similar to the aforesaid, is to meet with a very disagreeable *cat*astrophe. But, thank heaven! we were finally emancipated from these troublesome dilemmas, grievous embarrassments and disagreeable *cat*astrophes. We emerged upon the banks of the Allegany in the course of the evening. We discovered lights upon the opposite side of the river, and our cries were answered by an Indian boy who came across for us in his canoe. We were soon snugly ensconced by the fireside of an Indian wigwam! To our great surprise, we learned that we were the guests of the Indians residing at the settlement about thirteen miles below the point whence we started in the morning! That Chipmunk, was the name of the creek we had followed, and that, according to moderate calculation, we had tramped about thirty miles, in the pride of our superiority, in pursuit of two deer!

These settlements of Indians are the remnants of several of the New York tribes, and are scattered along the river in considerable numbers. The Indian reservation is about twenty miles long, and four or five broad. The name of their chief is Cornplanter,* an elderly man, who has great influence amongst them. The chiefs hold a council at Cold Spring, twice in a year. They subsist principally by hunting and fishing, though many of them pay some attention to agriculture, and cultivate a few acres of corn and potatoes. Their lands were formerly well covered with excellent pine timber. They have sold and continue to sell it, however, to the whites for a mere song, who are rapidly stripping the reservation of the best trees. Some of the Indians speculate in lumber considerably, but they are bad accountants, and very improvident. The young men and women are very good looking, and well dressed.—The latter seemed quite modest and retiring. A white man, a short time since, had presumed to pay improper addresses to one of the young women, who was so highly indignant that she pursued him a quarter of a mile with a drawn knife in her hand. Many of them wore petticoats and blue pantaletts, with a blanket thrown over their head and shoulders. When they desire to get married, they put on *red* pantaletts. The older squaws are exceedingly stupid. The only reply usually to be obtained from them is a very insignificant grunt, not unlike that of the porcine genus. The old men, on the contrary, are very garrulous. Their lodges are mostly log-houses, modelled after those of the whites. The one into which we were introduced, was built of small pine poles, piled up in a quadrangular form, and locked together at the corners. A pile of rude stones formed a very decent fireplace and chimney. Long braids of corn in the ear, depended from the wall on all sides; here was a rifle, there a bow and arrow, yonder some peltries, and in the corner a variety of household implements. Several men, and as many squaws, were arranged on opposite sides, the older ones smoking pipes, and all as silent as the night. They gave us to eat some Indian bread and fried venison. Our bed was a blanket and some husks in one corner, wherein we contrived to sleep quite soundly. My friend being sorely afraid of some whites who infested the settlement, insisted upon sleeping with his rifle at his side. It is a fact, that many of the whites who live on the reservation, and despoil the Indians of their lumber, are of the most detestable character.

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* Since the above was written we have been informed that Cornplanter is deceased.

The next morning I shot a duck in the river, at the distance of a hundred and fifty yards. The Indians seemed much surprised at this feat, and were very urgent to purchase my rifle. The truth is, the Indian is not so expert in the use of the rifle as the white man. But he is undoubtedly the best hunter; and the reason is, he is silent and cautious, he goes alone, he treads the earth with soft moccasins, he creeps close to his game, and seldom exposes himself until he is certain of his victim.

On reaching the plot of Allegany city, the point from whence we started the day before, we were greatly astonished to hear all sorts of noises resounding on every hand. There were yells and bells, horns and guns, and

> "To many a mingled sound at once
> The awakened mountain gave response."

We discharged our rifles several times in rapid succession, and very soon, to our great amusement, some half dozen of the good citizens of Olean, came galloping in, with countenances full of anxiety, flourishing the aforesaid instruments of detonation.—They greeted us like brothers who had been lost and found, or like captives rescued from the barbarity of an enemy. It seemed that the whole village had been awakened by the presumption that we, being strangers, were lost in those interminable woods infested with wild beasts! We satisfied them, however, that we had not been altogether unworthy disciples of Nimrod, and returned to the bosom of that worthy village, not a little pleased at the whimsical result of our adventures.

OLDEN TIME IN MASSACHUSETTS.

In 1627, there were but thirty ploughs in *all* Massachusetts, and the use of these *agricultural implements* was not familiar to all the planters. From the annals of Salem, it appears in that year, it was agreed by the town to grant Richard Hutchinson twenty acres of land, in addition to his share, on condition "he set up ploughing."

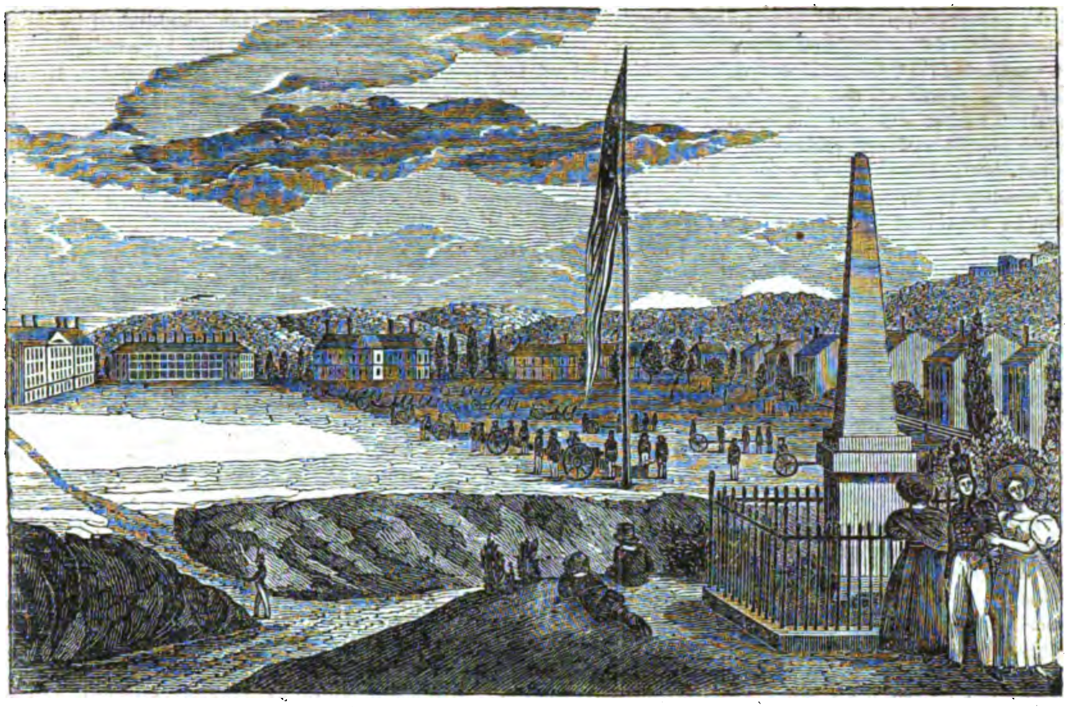
1630. A sumptuary act of the general court prohibiting short sleeves, and required the garments to be lengthened so as to cover the arms to the wrists, and required reformation "in immoderate great breeches, knots of riband, broad shoulder-bands and taylee; silk rases, double cuffs and ruffs."

1639. "For preventing miscarriage of letters, it is ordered that notice be given that Richard Fairbank, his house in Boston, is the place appointed for all letters, which are brought from beyond the sea, or are to be sent thither, or to be brought unto him, and he is allowed for every such letter 1*d.*, and must answer all miscarriages through his own neglect in his kind, provided that no man shall be obliged to bring his letter thither, unless he pleases."

1647. "The court order, that if any young man attempt to address a young woman without the consent of her parents, or in case of their absence, of the county court, he shall be fined four pounds for the first offence, ten pounds for the second, and be imprisoned for the third."

1649. Matthew Stanley was tried for drawing in the affections of John Tarbox's daughter without the consent of her parents, convicted and fined fifteen pounds; fees two shillings and six pence. Three married women were fined five shillings each for scolding.

1653. Jonas Fairbanks was tried for wearing great boots, but was acquitted.



WEST POINT.

> "Bright are the memories linked with thee,
> Boast of a glory-hallowed land!
> Hope of the valiant and the free,
> Home of their youthful soldier band."

If each bright spot on earth is indeed benignantly shone upon by some "bright particular star" in night's glorious canopy, then may we hope that the hallowed one which we have named is under no despicable influence. *Hallowed* by the footsteps of Washington and Kosciusko; consecrated by a nation to the Spartan-like training of a few devoted sons; nor less sacredly secluded by nature as the scene of retirement and study; it seems alike calculated to please the pensive sage and the aspiring youthful soldier; while even female loveliness vouchsafes to paint its memories in hues of hope and brightness, as the "*boast of a glory-hallowed land.*"

Courteous reader, if it has ever been your privilege, of a gentle summer's day, to sail down the picturesque river Hudson, are you not glad to recognise the lovely scene here presented, as the view of West Point from the Highlands? You have passed by Newburgh, and are entering the mountain gap, through which the waters have forced their rugged way. They seem baffled in the struggle, and you glance forward to the stern shore which seems to repel their progress; saying to the proud wave, "Thus far shalt thou come, and no farther;" when suddenly your eye is arrested by our nation's flag, proudly flying over a little sunny plain, a chance nook, where nature seems to have rested ere she began to pile the circumjacent mountains, and where signs of martial pomp, soon announce the location of the military academy. In the foreground is the new and spacious hotel, where my convivial host stands waiting to receive you; beyond it are the academick halls, the barracks, chapel and mess-house, appropriated to the cadets; and on the right are the comfortable dwellings, allotted as quarters for the academick officers. On the left, at the angle of the plain, are the traces of Fort Clinton; and on the right, towering far above Camptown, the suburb, occupied by soldiers and citizens, stands Fort Putnam, on Mount Independence, venerable in its ruins—stern monument of a sterner age, which survived the attempts of treason and the assaults of tyranny, only to yield its hallowed materials to the desecrating hands of a rapacious owner.* Of the three monuments which now meet your eye, the one on the right, and nearest to you, on a projecting tongue of land bordered with thick groves, is the Cadets' Monument, erected to the memory of the deceased officers and cadets of the academy. It cost $1200. The central one near the flagstaff, is a cenotaph, erected by Gen. Brown, to the memory of Col. Eleazar D. Wood, an early and distinguished graduate of the academy, who fell at the sortie of Fort Erie, in 1814. And the monument on the left, over the levelled redoubt or citadel of Fort Clinton, is sacred to KOSCIUSKO. It was completed in 1829, by the corps of cadets, at an expense of near $5000. You now approach the wharf, just beyond which is the rock, from which a chain was stretched across the river, in the time of the revolution, to prevent the passage of the British vessels.—They broke it, however, in 1777, when they forced the passage of the Highlands; and some links of it, near three feet long, and of bar-iron near two inches square, are still preserved in the store house.

The Military Academy was contemplated at an early period of our national existence; with a view to the preservation of military knowledge, and the enforcement of a uniform discipline in our army. As early as 1790, General Knox, then secretary of war, in a report on the organization of the militia, says: "Either efficient institutions must be established for the military education of youth, and the knowledge acquired therein be diffused throughout the country by the means of rotation; or the militia must be formed of substitutes, after the manner of the militia of Great Britain. If the United States possess the vigour of mind to establish the first institution, it may be reasonably expected to produce the most unequivocal advantages. A glorious national spirit will be introduced, with its extensive train of political consequences." In 1793, General Washington in his annual message to Congress, suggests the inquiry, "whether a material feature in the improvement" of the system of military defence, "ought not to be, to afford an opportunity for the study of those branches of the art which can scarcely ever be attained by practice alone." And in his annual message of 1796, he says: "The institution of a military academy is also recommended by cogent reasons. However pacifick the general policy of a nation may be, it ought never to be without an adequate stock of military knowledge for emergencies. Whatever argument may be drawn from particular examples, superficially viewed, a thorough examination of the subject will evince that the art of war is extensive and complicated; that it demands much previous study; and that the possession of it, in its most improved and perfect state, is always of great moment to the security of a nation. This, therefore, ought to be a serious care of every government; and for this purpose, an academy, where a regular course of instruction is given, is an obvious expedient which different nations have successfully employed."

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* It is not more than twenty years since the owner of an adjacent farm, finding Fort Putnam to be within his limits, as established by United States commissioners, proceeded to demolish the fort, using the materials for fences, &c. to compel the government to purchase it at an exorbitant price. This was finally done.

On the 7th of May, 1794, Congress passed an act providing for a corps of artillerists and engineers, to consist of four battalions, to each of which, eight *cadets* were to be attached; making it the duty of the secretary of war to procure, at the public expense, the necessary books, instruments and apparatus, for the use and benefit of said corps. This was the first introduction of cadets as a grade of officers in the army of the United States. The term *cadet*, derived from the French, signifying a younger son, was previously applied in England to those young gentlemen, who, seeking the situation, were trained for publick employment, particularly in the service of the East India Company. In our own army it signifies an officer ranking between a lieutenant and a sergeant; this grade having been confined to the pupils of the military academy since its establishment.

In 1798, Congress authorized the raising of an additional regiment of artillerists and engineers, and increased the number of cadets to 56. In July of the same year, the president was empowered, by another act, to appoint four teachers of the arts and sciences necessary for the instruction of this corps. Thus, although the cadets were not collected in one point, nor buildings erected for purposes of education; still the principle upon which the present institution rests was fully sanctioned; a new grade was created in the army to which young men were exclusively entitled to be admitted; and means were provided for their education in the science of war, that they might be fitted for stations of command.

The military academy was established by an act of Congress, of March 16tq, 1803, by which the military peace establishment was determined. By this act the artillerists and engineers were made to constitute two distinct corps. To the corps of engineers were attached ten cadets. The 27th section provided that the said corps, when organized, "shall be stationed at West Point, in the state of New York, and shall constitute a military academy." It is also provided that the senior engineer officer present shall be superintendent of the academy; and authorized the purchase of the necessary books, implements, and apparatus, for the use and benefit of the institution. In the following year, another act dated February 28, 1803, empowered the president to appoint one teacher of the French language, and one teacher of drawing.

Six years after, Mr. Jefferson, then president, and who had previously expressed some doubts of the constitutionality of the academy, thus calls the attention of Congress to the subject of its welfare: "The scale on which the military academy at West Point was originally established, is become too limited to furnish the number of well-instructed subjects in the different branches of artillery and engineering, which the publick service calls for. The chief engineer, having been instructed to consider the subject, and to propose an augmentation, which might render the establishment commensurate with the present circumstances of the country, has made his report, which I now transmit for the consideration of Congress. The plan suggested by him, of removing the institution to this place, (Washington,) is *also worthy* of attention. Besides the advantage of placing it under the immediate eye of the government, it may render its benefits common to the naval department; and will furnish opportunities of selecting, on better information, the characters most qualified to fulfil the duties which the publick service may call for." The proposal to remove the academy to Washington, like several subsequent ones, was promptly negatived; but on the above recommendation, an act was passed, increasing the corps of cadets by 156 additional members.

And in 1812, after the favourable notice of President Madison, Congress passed an act, dated April 29, which declares that "the military academy shall consist of the corps of engineers, and the following professors and assistants, in addition to the teachers of French and drawing already provided for, viz.: A professor of experimental and natural philosophy; a professor of mathematicks; a professor of the art of engineering, with an assistant for each." A chaplain was also to be appointed, and required to officiate as professor of geography, ethicks, and history. The number of cadets was limited to 260, the prerequisites for admission, the term of study and service, and the rate of pay and emoluments were prescribed.

Such were the essential provisions for establishing the military academy; and notwithstanding repeated efforts to change them, they still remain unaltered. The documentary history above given, is extracted from Col. Johnson's able report to the House of Representatives, dated May 17, 1834; a document which shows in detail how fully this institution has received the sanction and support of all the great statesmen of our nation, from the first establishment of our federal government. It also shows how unfounded are the prejudices which have been locally excited against the academy; and how substantial have been the benefits by which it has sought to repay the country for her maternal care and support.

The old buildings first occupied by the academy are long since gone to decay, and demolished. In 1812, the jurisdiction of 250 acres of land, was ceded by New York to the United States; and an appropriation of $12,000 having been made for the erection of quarters, the mess-hall, chapel, and south barracks were begun, and completed in the following year. The three brick edifices nearest the mess-hall, were erected in 1815–16, and the other three nearest the flagstaff on the same line, in 1820–21. The north barracks were built in 1817. Of the three stone dwellings west of the flagstaff, the farthest was erected in 1821; the others in 1825–26. The hospital and hotel were built in 1828–29; and the ordnance or gunhouse, in 1830. Appropriations have been made for a gymnasium and a chapel, which are now under construction. The water-works, for supplying all the buildings with water, or extinguishing fire, were completed in 1830, at an expense of $4,500. The annual expense of the academy is stated at $115,000; averaging about $425 for each cadet. This is one fourth less than the average cost of each cadet, prior to 1817, which was not less than $550 per annum. The library is well selected, of military, scientifick and historical works, containing nearly 10,000 volumes. The philosophical apparatus lately received from France is extensive, and constructed with the latest improvements. The chymical laboratory and mineralogical cabinet yet require enlargement.

Our biographical history of the academy shall be brief. Its superintendence was intrusted in its early stages to General Jonathan Williams, *ex-officio*, as chief of the corps of engineers. During this period from 1802 to 1812, the number of cadets was small, and the total number of graduates was only 71. This may satisfactorily answer the question, why we do not find more of them among the distinguished men of our country. The only professors recorded during this period, are George Barron, and afterwards Francis R. Hassler, professors of mathematicks; Francis De Masson teacher of French, and Christian E. Zoeller, of drawing. Mr. Hassler is now employed by the government on a trigonometrical survey of our coast.

From 1812 to 1815, the academy was placed under the direction of the succeeding chief engineer, General Joseph G. Swift. Among the professors, were the Rev. Adam Empie, chaplain; Andrew Ellicott, professor of mathematicks; Colonel Jared Mansfield, professor of natural philosophy; and Captain Alden Partridge, professor of engineering.

In 1815, Capt. Alden Partridge was appointed superintendent of the academy; the chief engineer, being, as at present, its inspector, *ex-officio*. The only new professor appointed was Claudius Berard, teacher of French.

Some traits of Capt. Partridge's character rendering a change desirable, he was relieved from his station in 1817; and succeeded by Colonel Sylvanus Thayer, of the corps of engineers; a gentleman every way qualified by nature and by acquirements both at home and abroad, for this responsible duty. Under his superintendence, an improved system of discipline was introduced; the course of studies much extended, so as to compare favourably with that of foreign military schools; and the studies required came to be thoroughly taught, Col. Thayer assiduously devoted all his resources to the advancement of the academy, until 1833, when at his own request he was honourably relieved from this station, and appointed to direct the erection of fortifications in Boston harbour. He was succeeded in the superintendence of the academy by Major R. E. De Russey, of the corps of engineers, a gentleman of amiable character and extensive acquirements.

The chief professors of the academy not yet mentioned, are: chaplains, Rev. T. Picton, 1818; Rev. C. P. M'Ilvaine, 1825, now Episcopal bishop of Ohio; and Rev. Thos. Warner, 1828; professors of engineering, Claude Crozet, 1817, since chief civil engineer of Virginia; Major David B. Douglass, 1823, now civil engineer; and Dennis H. Malan, 1831; professor of natural philosophy, Edward H. Courtenay; professor of mathematicks, Charles Davis, 1821; acting professors of chymistry, Dr. James Cutbush, 1820; Dr. John Torrey, 1824; and Lieut. W. Fenn Hopkins, 1828; teachers of drawing, Thos. Gimbrede, 1819; Charles R. Leslie, R. A. 1833; and Robert W. Weir, 1834.

The total number of graduates, from its establishment to July, 1834, inclusive, is 785. Of this number 434 were in the service at the latter date, as officers of the army; 9 have been killed in battle; 84 died in service; 208 have resigned; and the remainder are disbanded or otherwise dismissed from the service. Of those who sleep on the battle-field, Col. Wood, Col. Gibson, and Capt. Williams, fell at the sortie of Fort Erie; Rathbone at Queenston Heights; Hobart at Fort George; Ronem at Chicaga; Burchstead and Wilcox at Fort Mimms; and Smith at Christler's farm, in Canada.

"Our whole army possesses now far more of the publick respect and confidence than it did not many years since. It is the great distinction of the academy at West Point, that has contributed largely and effectually to this elevation of the character of the military establishment. And it has accomplished a nobler service, by sending forth numbers annually, competent to superintend the construction of those chains of internal improvement, which are to be the eternal bonds of our national union. The rail-roads which connect the capital of Massachusetts with the heart of the state, and with important harbours in Rhode Island and Connecticut; the improved facilities of communication afforded to the whole country by the Susquehannah and Baltimore, Baltimore and Ohio rail-roads; and the similar construction between Charleston and Hamburgh, S.C. the new roads which have augmented the wealth of the territories of Michigan and Arkansas, by opening new channels of transportation; and the securities extended to the internal and foreign commerce of the nation, by important harbour improvements upon the shores of the lakes, and upon the seacoast; these are some of the enduring memorials of the usefulness of the military academy, and of the returns it has made for the care, and time, and money, which have been bestowed upon it. Other testimonials, and other rewards have been accorded to it, by the literary institutions of our land, which have invited its graduates to fill important professorships. The president and one of the professors in the college of Louisiana; the president of Hamilton college, and the vice president and the professor of mathematicks in Kenyon college, in Ohio; the professors of mathematicks in the college of Geneva, and in the university of Nashville; the professors of chymistry in the universities of Pennsylvania, and Virginia, have all been members of the academy, and have resigned their commissions in the army, upon receiving these honourable appointments. Very recently, two second lieutenants have accepted vacant chairs in the university of New York. No words can demonstrate with one half the force and impressiveness, the beneficial influence of the military academy upon the characters of its members, and upon the national reputation. Within the short period of thirty years, this institution, whose own high reputation is now sustained by professors, all of whom, with but one exception, have been educated within its walls, has not only furnished to the army gallant and accomplished officers, and to the country skilful engineers, but has sent forth principals and professors, to ornament and sustain colleges and literary seminaries. To this list of those who have been thus distinguished, might be added the name of Ritner, who graduated with a highly respectable rank, in possession of his comrades' affection and confidence; and became the professor of civil and topographical engineering in Washington college in Pennsylvania; and died at the moment when the prospect of serving his native state dawned upon him, and when his native state began to rejoice in the anticipation of his usefulness and success." In this complimentary summary, extracted from Col. Johnson's report, may now be included the distinguished professor of mathematicks and philosophy in the university of Pennsylvania. But while we would thus award honour where honour is due; and show that, estimated according to her contribution of national science, the military academy is "not a whit behind the chiefest," far be it from her sons to monopolize distinction, or to say that she has done any more than a national academy ought to have done, in return for all her advantages.

We shall conclude this hasty sketch by a review of the practical considerations which should influence those who are seeking or who may gain admission to the military academy.

The age of admissions is now limited from 16 to 21 years; as that is supposed to be the most suitable period for completing, or rather commencing a military education. The acquirements necessary for admission, are, an acquaintance with reading, writing, and the elementary rules and *principles* of arithmetick. Efforts have been made, and it has been recommended by some boards of visiters, to raise the standard of admission, requiring a knowledge of grammar, geography, and the French and Latin languages, as a prerequisite. The decisive objection to this proposition is, that it would close the doors of the academy against many who have not the pecuniary means of making these acquirements. But let it not therefore be supposed that those acquirements are the less valuable or necessary. On the contrary, as geography, history and the Latin language are now taught in the academick course, it is so much the more important that young gentlemen should be well versed in them before entering the academy; otherwise, they are obliged to acquire them by private study, or else remain ignorant of these essential branches of a liberal education. Many candidates fail of being admitted at the initiatory examination, because, although they can give the rules of arithmetick, yet cannot explain the principles on which these depend. As opportunity is afforded for gratuitous instruction on this subject at the academy, from the 1st of June, until the examination of candidates near the close of the month, they who are anxious for success would do well to avail themselves of this assistance.

The months of July and August in each year are devoted solely to military exercises; for which purpose the cadets leave the barracks and encamp in tents on the plain, under the regular police and discipline of an army in time of war. For this purpose the cadets are organized in a battalion of four companies, under the command of the chief instructer of tacticks and his assistants. The corporals are chosen from the 3d class, or cadets who have been present one year; the sergeants from the 2d class, who have been present two years; and the commissioned officers or captains, lieutenants, &c., are selected from the 1st class, or highest at the academy. All the other cadets fill the ranks as private soldiers, though necessarily acquainted with the duties of officers. In rotation, they have to perform the duty of sentinels, at all times, day or night, storm or sunshine, in camp, and evenings and meal-times, in barracks. Cadets who have been present two encampments, are allowed, if their conduct has been correct, to be absent the third, on furlough. The drills, or military exercises, consist in the use of the musket, rifle, cannon, mortar, howitzer, sabre and rapier, or broad and small sword; fencing, firing at targets, &c.; evolutions of troops, including those of the line; and the preparation and preservation of all kinds of ammunition and materials for war. The personal appearance of the corps of cadets cannot fail to attract admiration; especially on parade or review. The uniform, is a gray coatee, with gray pantaloons in winter, and white linen in summer. The dress cap is of black leather, bell-crowned, with plate, scales and chain. The splendid band of musick, which, under Willis, made hill and valley ring with notes of "linked harmony long drawn out," though changed, still pleases; and under its new leader, promises soon to deserve its former renown, as the best in our country.

The cadets return from camp to barracks the last of August, and the remaining ten months of the academick year are devoted to their arduous studies.—The ceremony of striking the tents and marching out of camp is so imposing as to be well worth an effort of the visiter to be present on that occasion. On the previous evening, the camp is brilliantly illuminated, and enlivened with musick, dancing and bevies of beautiful strangers; it presents quite a fairy scene.

For the sake of more full instruction, each class is divided into several sections, each having a separate instructer. Thus each cadet is called upon at almost every recitation, to explain a considerable portion of the lesson; for the morning recitations generally occupy two hours each. The written or delineated demonstrations are explained on a black-board in the presence of the whole section.

The studies of the first year are algebra, geometry, descriptive geometry, trigonometry, and the French language. All the mathematical studies are practically taught and applied to numerous problems not in the books; on the resolution of which greatly depends the reputation and standing of each rival candidate for pre-eminence. The studies of the second year, are the theory of shades, shadows and perspective, practically illustrated; analytick geometry, with its application to conick sections; the integral and differential calculus or science of fluxions; surveying and mensuration; the French language, and the elements of drawing, embracing the human figure in crayon. This completes the course of mathematicks, and also of French; which the cadets learn to translate freely, as a key to military science, but which few of them speak fluently.

The third year is devoted to a course of national philosophy, including mechanicks, opticks, electricity, magnetism and astronomy; together with chymistry and sketching landscapes with the pencil, and topography with the pen, which complete the course of drawing.

The fourth and last year is appropriated to the study of artillery and infantry tacticks; the science of war, and fortification, or military engineering; a course of civil engineering, embracing the construction of roads and bridges, rail-roads and canals, with the improvement of rivers and harbours; a course of mineralogy and military pyrotecting; together with the elements of rhetorick, moral philosophy, and national and constitutional law.

To test the progress of the cadets in these studies, semi-annual examinations are held, commencing on the first Mondays of January and June; at the latter of which a board of visiters, appointed by the secretary of war, is present to make a critical official report of the state of the academy. The examination of all the classes usually occupies about a fortnight, and is very severe; but still is not considered the full test of individual proficiency. Each instructer makes a weekly class report, on which is recorded the daily performance of each cadet; those who excel being credited 3, and those who fail entirely marked 0. These marks are accessible to the cadets from week to week, and stimulate their exertions; finally, they are summed up at the end of the term and laid before the academick staff, and visiters; so that the standing of each cadet is influenced not only by his examination, but by all his previous recitations. A certain prescriptive proficiency being required of the cadets in each branch, those who fall below this limit are necessarily discharged from the service. Averaging the last 10 years, where a class of 100 enters the academy, it is reduced to about 70 at the end of six months, 60 at the end of one year, 50 at the end of two years, and 40 at the end of three years; not more than about 35 graduating.

There is a general merit roll of every class, made out at the end of each academick year; the merit of each cadet being expressed by a number denoting his proficiency or acquirements. But the final standing of each cadet, on which depends his rank in the army, is determined by the sum of his merit, in all the different branches; and this depends not only on his actual proficiency in any branch, but also on its relative importance. This latter is thus estimated at present by the academick staff, viz.:—Conduct 300; engineering 300; mathematicks 300; natural philosophy 300; chymistry and mineralogy 200; rhetorick, ethicks and law 200; infantry tacticks 200; artillery 100; French 100; and drawing 100. Hence the individual who should excel in all the branches, would be credited with 2100 on the final merit roll; but no more than three or four such instances have ever occurred at the academy. The cadet, in each class, having the greatest sum of merit, is placed first on the roll, and so onward; and he who is deficient in only one single branch is discharged, or else turned back another year to receive a second probation.

The graduates of the military academy are entitled by law to a preference over other applicants for commissions in the army. As the average number of vacancies is only about 25 annually, the army would soon be more than filled, did not a considerable number of the graduates voluntarily resign, in order to embrace other professions, particularly that of civil engineering. Although feeling under a moral obligation to offer their services to the country in case of any future emergency, they deem it right, as it is freely permitted, in time of peace to embrace other professions in which they may seek to be still more useful. Those who remain in the army are attached as brevet second lieutenants to the different corps, until they may receive higher rank on the occurrence of vacancies. American Magazine.

PHYSICAL GEOGRAPHY.

Of Climates.

The term physical climate, suggests to the mind the degree of heat and cold, the drought, the humidity and the salubrity, which occur in any given portion of the globe.

The sun was long considered as the only source of those varieties of temperature which we experience in the different regions of the earth. Now, however, the causes of physical climate are admitted to be generally, at least *nine* in number.

Malte Brun thus enumerates them:—1. The action of the sun upon the atmosphere. 2. The interiour temperature of the earth. 3. The elevation of the surface above the level of the ocean. 4. The general inclination of the surface, and its local exposure. 5. The position of its mountains relatively to the cardinal points. 6. The neighbourhood of great seas and their relative situation. 7. The geological nature of the soil. 8. The degree of cultivation and of population at which a country has arrived. 9. The prevalent winds.

The air does not appear to acquire immediately, by the passage of the solar rays, a considerable degree of heat. This is proved by the successive coldness of the different strata of air, which is observed upon all mountains. What chiefly contributes to warm the lower regions of the air, is the reflection of the rays which strike against the ground, and which, thrown back again towards the atmosphere, stop in the inferiour part of it, and are confined in the midst of the watery vapours with which it is loaded. This reflection necessarily accumulates the heat in the regions nearest to the surface of the earth.

The degree of immediate solar heat is determined by four causes. The first is the distance of the sun from the earth. The second cause is the direction, more or less oblique, in which the rays strike the earth, and which depends upon the height of the sun in the ecliptick. The third circumstance is the length of the day, or the length of that semi-diurnal arc which the sun describes. The fourth cause which modifies solar heat, is the refraction which the rays experience in passing more or less through the different strata of the atmosphere. Bonguer has calculated, that taking ten thousand rays, eight thousand one hundred and twenty-three of them arrive at a given point, if they come perpendicularly, seven thousand six hundred and twenty-four, if the angle of direction is fifty degrees, two thousand and thirty-one if it is seven degrees, andonly five if the direction is horizontal. The solar heat, distributed according to these four principles, would be entirely different from that which we actually experience.—We should have cold weather at the equator, and terrible heat at the poles during the summer solstice, and in the winter the heat would be nearly equally distributed. We therefore conclude that the direct and immediate action of the sun's rays, does not, of itself, determine physical climates.

The internal heat of the globe has been supposed by some to be the cause of climates. But whether this internal heat be the effect of a central fire, or the consequence of the successive and continued action of the sun, it would hardly seem probable that in either case, it would be likely to produce those very great differences of temperature which we experience in different portions of the earth. Yet it may have a sensible effect, in low countries.

With the elevation of the land, cold increases in a very rapid progression. This is familiar to every mind that has been conversant with voyages and travels. It is a wellknown fact, that on the tops of some of the higher mountains, " eternal winter reigns."

The general inclination of the surface of a country, undoubtedly has a very powerful effect upon the general temperature of the atmosphere which surrounds it. If the face of the soil, for instance, is inclined to the southwest, the climate will be warm. A hill, inclined forty-five degrees towards the south, when the sun is elevated forty-five degrees, receives the solar rays perpendicularly, whilst upon a plain, the same rays strike the soil under an angle of forty-five degrees, that is, with one quarter less force; and a hill inclined forty-five degrees to the north, will be struck by the solar rays in a horizontal direction, which makes them glide along the surface. If the ground is still more inclined to the north, it will receive no rays, and will remain always in the shade, and will consequently be cold.

Mountains act upon climates in two ways; they attract the vapour suspended in the air; these vapours, by their condensation, produce clouds and fogs, which generally conceal the summits from our view. Often, also, these assemblages of watery substances, which the winds waft in every direction, are stopped in their devious course by chains of mountains, in the elevated valleys of which they continue to accumulate.

The position of mountains may render climates cold or warm. If the country is open on the north, and blocked by mountains on the south, the climate will commonly be cold; if barricaded by mountains against the northern winds, then the southerly winds will produce a warmer temperature. The Alps undoubtedly contribute in securing to Italy its delightful and happy climate, its perpetual spring, and its double harvests.

The shelter from winds which is afforded by mountains, may sometimes become hurtful from excess. Thus we find the heat prove insupportable in those valleys, which in summer concentrate and strongly reflect the rays of the sun. " In valleys," says Malte Brun, " which are low, narrow, and hollow, and which receive dry winds very obliquely, torrents of water and the rains, find no vent, the surface becomes marshy, the air does not circulate, and dampness and fogs perpetually prevail. It is in such places that we meet feeble, indolent, and stupid beings, called *cretius:* they become deaf, dumb, and almost blind; they remain insensible to all impressions, except sensual appetites; if we strike them, they testify no sensation; and they appear to be excited by no wants. Their dangling arms, their gasping mouths, their looks swollen and pendent, their cadaverous colour, indicate the lowest state of human degradation, and of animal degeneracy. The chilling damp which almost constantly broods over these countries, may be regarded as the true cause of the goitre and *cretinism.* These maladies are to be found in the Lower Valais, at the base of the Pyrenees and Appenines, and in some of the valleys of Dauphiny and Upper Provence."

The neighbourhood of the sea moderates the excess of temperature. In hot climates, the maritime regions are not so warm as the centre of the plains. In high latitudes, the coasts and the islands are less cold than the interiour of the continents. In the mountains of Norway, so intense is the cold, that it once proved fatal to a Swedish army; the dead bodies were found lying rank and file; at the same time, the coasts of the country enjoyed a very mild climate.

The nature of the soil must have an influence on climate in various ways. All grounds are not heated equally soon. One soil quickly parts with its acquired heat, while another retains it for a long time. Exhalations, which vary according to the nature of the soil, rise into the atmosphere, and become identified with it. Clayey grounds, and those which are impregnated with salt, cool the atmosphere; heaps of sand, when they are dry, augment the heat. Some provinces owe, in part, their dry and salubrious temperature to a sandy, calcareous, and, in general, light soil. Ground which is stony and barren, emits fewest vapours. The contrary is true of marshy soils.

" Man exercises a slow but powerful influence upon the temperature of the air. Without cultivation, few climates would be salubrious and agreeable. Let us contemplate a desert country; the rivers, abandoned to themselves, become choked, and overflow; and their waters serve only to form pestilential marshes. A labyrinth of brambles and thickets overspread the most fertile hills. In the meadows, the unsightly mushroom, and the useless moss, choke the nutritious herbs; forests become impenetrable to the rays of the sun; no wind disperses the putrid exhalations of the trees which have fallen under the pressure of age; the soil, excluded from the genial and purifying warmth of the air, exhales nothing but poisons; and an atmosphere of death gathers over the whole country. But what do not industry and perseverance accomplish? The marshes are drained; the rivers flow in their disencumbered channels; the axe and fire clear away the forests; the earth, furrowed by the plough, is opened to the rays of the sun and the influence of the wind; the air, the soil, and the waters, acquire by degrees a character of salubrity; and vanquished nature yields its empire to man, who thus creates a country for himself."

The predominant winds of every country variously modify the united influence of all the elements which constitute physical climate, and which we have just been considering. But the nature, the direction, and the intensity of the winds, depend upon general and local exposure, the neighbourhood of seas, the elevation of mountains, and other circumstances. Thus, the causes of climate form together a circle of which we can point out neither the first link nor the last. We observe that they are exceedingly various, and more or less combined.—Climates, indeed, exert a very great influence upon each other. The poles are cold; the equator is hot; the combined influences of both, produce the intermediate temperature of the temperate zone.—Tradewinds, blowing continually from the east over the sea, render the maritime coasts upon which they strike, much colder than the western coasts. The beautiful climate of the south of France is about the latitude of Massachusetts, yet the difference of climate is striking. The interiour states and prairie counties of the Missouri, are much milder than the eastern seaboard in the same latitudes. Thus, while it is the severest winter weather at Boston, grass is growing and flowers are blooming at the mouth of the Columbia. But it is not the sun, nor the winds, nor cultivation, nor exposure alone that produces the different climates; but it is the influence of these and other causes combined that modifies the temperature of particular countries; that gives a *hot and dry* climate to one region; a *hot and humid* climate to another; a *cold and dry* to a third, and a *cold and humid* climate to another portion of the globe, or that furnishes those delightful temperatures so agreeable and healthful to human life.

He that knowingly defends the wrong side of a question, pays a very bad compliment to all his hearers; it is in plain English this: falsehood, supported by my talents, is stronger than truth supported by yours.

The horrible catastrophies that sometimes happen to the vicious, are as salutary to others by their warning, as the most brilliant rewards of the virtuous are by their example. And on the contrary, the success of the bad, and the sufferings of the good, might make us tremble for the interests of virtue, were not these very things the strongest proofs of an hereafter.

The upright, if he suffer calumny to move him, fears the tongue of man more than the eye of God.

THE NIGHTINGALE AND GLOW-WORM.

[Nightingale.]

A nightingale, that all day long
Had cheer'd the village with his song,
Nor yet at eve his note suspended,
Nor yet when eventide was ended,
Began to feel, as well he might,
The keen demands of appetite;
When, looking eagerly around,
He spied far off, upon the ground,
A something shining in the dark,
And knew the glow-worm by his spark;
So, stooping down from hawthorn top,
He thought to put him in his crop.
The worm, aware of his intent,
Harangued him thus, right eloquent:—
  "Did you admire my lamp," quoth he
"As much as I your minstrelsey,
You would abhor to do me wrong,
As much as I to spoil your song;
For 'twas the self-same Power divine
Taught you to sing, and me to shine;
That you with musick, I with light,
Might beautify and cheer the night."
  The songster heard his short oration,
And warbling out his approbation,
Released him, as my story tells,
And found a supper somewhere else.
  Hence, jarring sectaries may learn
Their real interest to discern;
That brother should not war with brother,
And worry and devour each other:
But sing and shine with one consent,
Till life's poor transient night is spent,
Respecting, in each other's case,
The gifts of nature and of grace.
  Those Christians best deserve the name,
Who studiously make peace their aim;
Peace, both the duty and the prize
Of him that creeps and him that flies.—COWPER.

[Male and Female Glow-worms. Male winged, Female wingless.]

PUBLICK SQUARES.

BY REV. HEMAN HUMPHREY, D. D.

The English people, in good circumstances, seem to be much more anxious than we are, to secure the luxury of deep front yards, and of large open spaces in the rear of their dwellings. They want room—they want fresh air—they want, when within doors, to be as much retired as they can from the noise and bustle of the streets. Nothing would induce those of them who understand what real comfort is, and who have the means of securing it, to submit to that kind of strait-jacket confinement which many of the people of this country so ingeniously contrive for themselves and their children.

In London proper, that is in the most ancient part of the city, which was walled in, the dwelling-houses, as well as other buildings, are very compact, and most of the streets are miserably narrow. But in the newer parts, embracing Westminster, Southwalk, Chelsea, Islington, Hackney, &c., the lots on which the houses are built, are so large and so well laid out, as often to give a rural appearance to those very extensive quarters of the city. For long distances, on some of the most important streets, as on the New City road, for example, the houses are built so far back as to give ample space in front for trees, shrubbery, and flowers. It is often from fifty to a hundred feet from the outer gate to the porch. If, in going home from his place of business, the merchant is justled at every step, and almost run down by the crowd, the moment he reaches his own door, he is free. He enters, and the tumult dies away.—He breathes a pure air, and looks out from every window of his dwelling, not so much upon high and naked brick walls, as upon the sylvan and floral beauties by which it is surrounded.

In parts of the city, where the luxury of spacious court-yards and gardens cannot be enjoyed by every family, I observed here and there, a charming little park, or square, neatly enclosed by a high iron railing, and apparently belonging to a number of families in the immediate vicinity. These enclosures, tastefully laid out into gravelled walks, and adorned with fine shade-trees, shrubbery, flowers, and ivy-clad summer-houses, are favourite resorts in pleasant weather, and it is especially delightful to see very young children, spending hours together with their nurses, in these miniature Elysian fields, inhaling the fresh breezes, and playing upon the smooth grass-plats, and among the bushes. How very different, I could not help saying to myself, is this young freedom and early exposure to air and sunshine, and soft showers too, if one happen now and then to surprise them in the midst of their sports—from that tender imprisonment, to which the children of wealthy families, are for the most part doomed in our own cities. And how very striking, I may add, is the contrast, too, between the rosy health of the former, and the white, lily complexion and frailty of the latter. It is easy to conceive how, in the laying out of every large town, these little enchanting squares and ellipses might be reserved for every ten or twenty families; and every body must see, how much they would add to the beauty of the place, and how essentially they would minister to the health and comfort of the population.

The newer and better parts of London are adorned and refreshed by publick squares and gardens, which must be regarded by every man of taste, among the brightest ornaments of the city. Of these there are from *thirty to forty*, chiefly in the west part of the town; and many of them, such as Russel Square, Gray's Inn Gardens, Lincoln's Inn Fields, St. James' Square, &c., are quite extensive. Some of them can not cover less than from six to ten acres. How exceedingly these bright and verdant oases, these charming shaded promenades, lying within a few minutes walk of a million of people, must minister to their health and comfort. Who would consent, for half the bank of England, to have them cut up into small building-lots, and covered over with stone and brick and mortar? Who will not say, that were another London to be built, in any part of the British empire, there ought to be many more, and larger publick squares reserved, in laying out the new city, than there are here?

But it is the great parks of the metropolis, which more than any thing else, delight the eye, and excite the admiration of the stranger. At least it was so with me. There are four of these, the smallest of which would, in an American city, with which I am acquainted, be regarded as a wasteful appropriation of land, which, if brought into market, could, in half an hour, be sold for millions of pounds sterling. Were we to lay out such a city, we should be much more likely to calculate how many dollars it would take, to cover a single large park, which some might propose to fence off and adorn, than to consider what countless multitudes of people must want it, for air and exercise, and necessary relaxation in all coming generations.

I have often thought, what would be the condition of London without her publick squares and gardens and parks? Where could her vast population go for pure air, and to throw off care and business and study? How could such a world of human beings hope to escape the ravages of pestilential diseases?

And how could I help contrasting London, in the features of it which I have briefly delineated in this letter, with the populous growing cities and towns in the United States? No people in the world have so much land, so much room to do just what they please, as we have. A mile square, or *five* mile square is nothing to us; and yet, no people under the sun are so covetous of every foot of land, where there is any prospect of thriving business, and a growing population. It would seem in our large commercial cities, and even in places of limited trade, as if all the men of business wanted to crowd into one narrow street, and to erect as many buildings as possible, upon every square acre, that is occupied at all. Who has not been struck with this gregarious propensity, in passing through the new and flourishing towns and villages of this country? Utica, Geneva, Oswego, Rochester, Buffalo, Cleveland, Chicago, Cincinnati, and a hundred others.—Why, one would judge, from their extreme compactness, that they were to be fortified, like the old European towns, to prevent the incursions of barbarians.

Should merchants and other men of business, who happen to cast their eye upon this letter, smile at my ignorance of the great facilities of trade, as they probably will, and tell me that they find a thousand advantages in what I call their strait-jacket and huddling systems, it would not become me to dispute the matter with them at all. But whatever may be true in regard to business, there can be no good reason, I am quite sure, for bringing out whole blocks of dwelling-houses to the very line of narrow streets, so as to have no yard in front, and then by narrowing the blocks, to crowd the houses one upon another in the rear, so as to leave no space for gardens or fruit-yards, when thousands of acres of cleared land, or primitive forest, lie all around, inviting the builders to extend their town over just as wide a surface as they please. This strange want of taste and forecast, this unaccountable disregard to health and comfort and beauty, will be matter of the deepest regret to those who come after us, some two or three hundred years hence, when many of our towns, which are now just springing into existence will have become great cities; and it will be too late to remedy the evils of our absurd and contracted policy. What a pity, that in fifty growing towns, which I might name, no open squares, of any extent, were left, in laying them out, and that as far as they have been extended, almost every rod of ground is covered with buildings. In most cases, perhaps something might yet be done, to redeem these embryo cities from everlasting discomfort, by seasonably purchasing and laying out the grounds which lie in the vicinity, so as to leave ample room for air and exercise—for trees, and shrubbery, and flowers—for gravelled walks and wide avenues. How much to be desired is it, that suggestions of this sort should be speedily acted upon by those who now have it in their power to bless unborn millions, with health and convenience; and that those men of wealth and enterprise, who are founding new cities and towns in the far west and elsewhere, should, in the same way, hand down such invaluable comforts and blessings, if they do not their own names to a grateful posterity. And may I not just add in this connexion, how easy it would be to plant avenues, and lay out little malls and parks, and pleasure-grounds, in and around our thousand thriving villages. How greatly would it add to their beauty and multiply their attractions. I am mortified when I think how difficult it is, in most cases, to raise even a few dollars for any such purpose. In acting upon the maxim, that those who come after us must take care of themselves, as we have done, we neglect to take care of our own health and comfort.

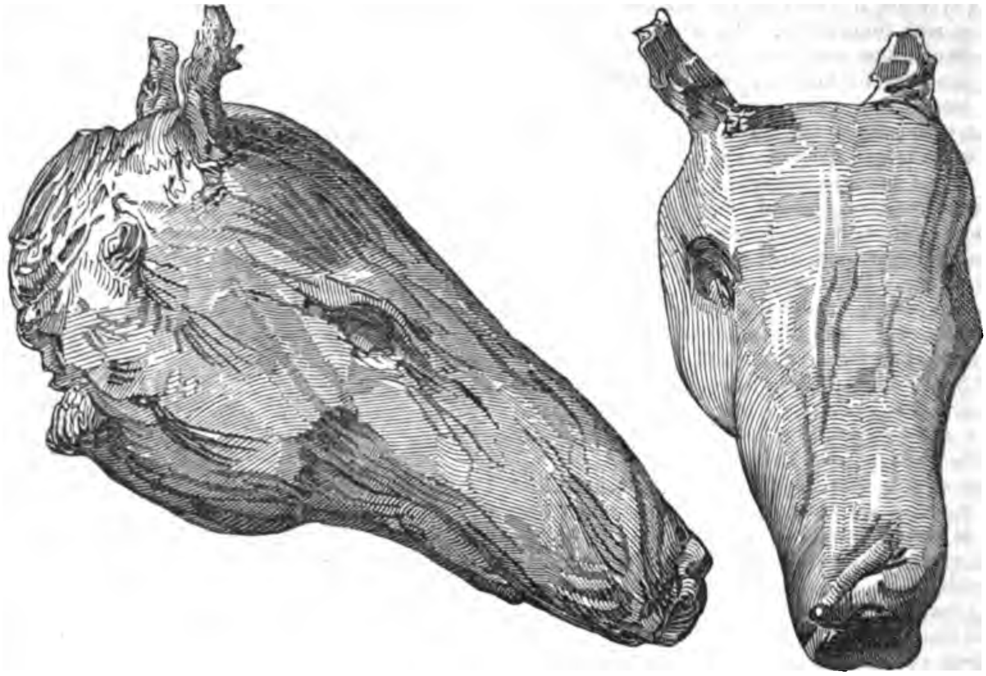
In the small provincial towns of England, more attention has been bestowed upon this subject than with us. Still much remains to be done there as well as here. At the last session of parliament, Mr. Buckingham, the great champion of temperance, brought in a bill which was favourably received, to aid and encourage the people in making such healthful and ornamental improvements as I have just mentioned. It was thought the bill would pass, and that whatever appropriations the government may be inclined to make, will impart a favourable stimulus to the people.

In respect to reserving and laying out pleasure-grounds upon a grand scale, in or near any of our cities, it may be said that WE have no London, with its million and a half of people to be provided for; and that it would be absurd in us to fence off such territories as Hyde and Regent's Park for publick accommodation. It is true, we have as yet no London in America; but are we not every day told that New York, at least, will one day vie with that proud metropolis of the British empire. The whole of York island, I believe, is already laid out in anticipation of the future greatness of the city. New York has her Battery, I know; and a few publick squares of moderate extent, have been reserved in the plan; but where is the reservation for even one great park to impart beauty and health and comfort to this commercial emporium of the Western continent? How grievously will this want be felt, when it comes to number a million of inhabitants, and how bitterly will they regret the narrow policy of its founders.

SINGULAR DEXTERITY OF A GOAT.

"Upon our road," (from Jerusalem to Bethlehem,) says Dr. Clarke, in his Travels, "we met an Arab with a goat, which he led about the country for exhibition, in order to gain a livelihood for itself and owner. He had taught this animal, while he accompanied its movements with a song, to mount upon little cylindrical blocks of wood, placed successively one above the other, and in shape resembling the dice-boxes belonging to a backgammon table. In this manner the goat stood, first upon the top of one cylinder, then upon the top of two, and afterwards of three, four, five, and six, until it remained balanced upon the top of them all, elevated several feet from the ground, and with its *four feet* collected upon a single point without throwing down the disjointed fabrick upon which it stood. The practice is very ancient. It is also noticed by Sandys. Nothing can show more strikingly the tenacious footing possessed by this quadruped upon the jutty points and crags of rocks; and the circumstance of its ability to remain thus poised may render its appearance less surprising as it is sometimes seen in the Alps, and in all mountainous countries, with hardly any place for its feet, upon the sides and by the brink of most tremendous precipices. The diameter of the upper cylinder, on which its feet ultimately remained until the Arab had ended his ditty, was only two inches, and the length of each cylinder was six inches."

Never speak to deceive, nor listen to betray.
Friendship once injured is for ever lost.
Gossiping and lying go hand in hand.



NOVEL ORGANICK REMAINS.

That scull had a tongue in it, and could sing once !—Hamlet.

Reader! what do you imagine we have catered for you now? Or rather, what new subject do you think that rummaging science of geology has added to its extended list of discoveries? O Solomon! Solomon! here *is* something new under the sun. Thy extraordinary wisdom, wonderfully comprehensive though it was, could not have embraced this subject in this peculiar modification. "Trees, from the cedar tree that is in Lebanon even unto the hyssop that springeth out of the wall;" beasts, fowls, creeping things, and fishes, were familiar to thee, yet here is a craniological development which never could have entered thy imagination. Baron Cuvier never dreamed of it in all those profound investigations which he had the patience to make concerning the remains of the Siberian mammoth, the mastodon, the megalonyx, the giant lizard, the Irish elk, the wapiti, and those deceased monsters of the Nile. If, peradventure, the learned philosopher had stumbled upon it, it is our opinion that he would have been completely *nonplused.* Even Peale cannot number it in the long catalogue of his wonderful curiosities. Professor Hitchcock has discovered no stony bird-tracks like it in the *ornithicnitical* valley of the Connecticut. There is not a scull like it, in all that vast catacomb, the cabinet of the Phrenological Society at Paris.—No art or science is acquainted with it, no mortal has ever before seen it or described it. You may imagine it looks very like a deer's head, and must have belonged to one of that genus of animals. But it did not. Observe those delicate flesh lines, that strong jaw bone, the tattered muscles of the neck, the broken horns, that peculiar eye, and that singular cartilaginous whorl, or nasalogical appurtenance. Perhaps the latter appendage induces you to include it among the tapirs. It does not belong there. It has recently been determined by geologists that this country had an antediluvian existence, and that there were estuaries and rivers here, which were visited by large birds? But it is plainly no bird's head.—Recur then to the western prairies; think of those uniform rows and circles of trees, those mounds and remnants of ancient fortifications, those monstrous bones of the salt-licks. There we have indubitable evidence of the primitive existence of things upon a large scale. Might not this subject have been an inhabitant of the earth in that day and generation, and after having laid for ages under the clod of the valley, is now exhumed to be exposed to the publick gaze?

Nay, indulgent reader, it was reserved for us first to unfold the truth in this matter, and it shall no longer be withheld. This curious specimen of natural history was exhibited to us by Mr. John Hooper, of Bridgehampton, Long Island. It was found on that Island, and dug out of low marshy ground in tide-water. It is not the head of an animal, though it precisely resembles one. But it is a natural vegetable root, several inches in length, and of the figure represented in the engraving! The root, we are informed, is highly esteemed for its medicinal virtues. It is vulgarly called *quassia root,* and is, we believe, seldom found in this country. The exact resemblance of this specimen to the head of an animal, renders it quite a remarkable curiosity.

ANTHRACITE COAL TRADE OF PENNSYLVANIA.

Written by the Hon. Caleb Cushing, from Mass., for the North American Review, for January, 1836.

We visited, recently, the anthracite coal mines in the interiour of the state of Pennsylvania. The spectacle of enterprise, industry, and prosperity, which we there beheld, was most imposing to the eye, and most instructive to the mind. In the heart of a wild broken territory, amid the sharp ridges of the Alleganys, intersected by the hundred rivers and streamlets which swell the tides of the Delaware and Susquehannah, in what was but a few years ago one of the most desert regions of the United States, we found a numerous and fixed population, with all the appliances of refined life, and a multitude of improvements, in rail-roads, canals, and other publick works, of which the most advanced people in America, or even in Europe, might justly be proud. A new world seemed to have sprung up in the wilderness, as if by enchantment. Smiling villages were spread out in peace and abundance beneath overshadowing peaks, and beside mountain-tops reaching up their bleak summits to the sky. The dwellings of cultivated competency, and warehouses stored with merchandise, stood on the very edge of the old primeval forests of the continent. Here was the centre of a vast business, which had all at once vivified the surrounding country, converted the wildest waste into the theatre of active life, given a fresh stimulus to individual enterprise, created an inexhaustible source of wealth to the state in which it lay, and opened a new commerce and a new bond of fraternity to the whole Union. We left the scene, with a strong and abiding sense of the energy and spirit of our people, with renewed admiration of the resources and destinies of our country, and with deep-felt gratitude to that bountiful Providence which bestowed upon us this our happy land. We cannot hope to communicate our feelings and impressions by words; the scene should be seen to be appreciated. Nor shall we attempt to do so. Neither shall we enter into any speculations or inquiries concerning the geological history, formation, or natural character, of anthracite coal. The objects we have in view are more plain and practical. We have collected, from personal observation, from correspondence, and a large mass of printed matter, a variety of facts respecting the production and commerce of anthracite coal, a summary statement of which we propose to lay before the readers of the Review.

Pennsylvania abounds in mineral treasures of the most useful kinds, that is, iron and coal; these being the precise means, out of which the actual grandeur and opulence of Great Britain have in great part sprung. On a future occasion we may recur to its deposites of iron ore, and of bituminous coal; our present concern is with its anthracite coal exclusively. It is singular that, with the general knowledge they already possess of their unexampled mineral resources, and their liberality in the promotion of publick improvements, the people of Pennsylvania have not caused to be made an accurate geological survey of the whole territory of their state, by suitable scientifick persons, according to the course recently pursued in the state of Massachusetts. So far as the anthracite of Pennsylvania has been explored, and its presence fully ascertained, it occupies three separate and distinct beds or fields, which lie near together on the easterly side of the Susquehannah, upon or below its north branch, and bear a striking similitude each to the other in geographical position, extent of area, and geological features. They are, first, the coal-field of Mauch Chunk and Schuylkill; secondly, that of Beaver Meadow, Shamokin, and Mahoney; and thirdly, that of Lackawanna and Wyoming.—Each of these fields forms a long elliptical basin, with a well-defined border of red shale, and surrounded by a barrier of long and sharp-mounted ridges. Two of these fields, the first and the second, run side by side, ranging a little north of east; the remaining one is somewhat apart from them, and has a more northerly direction. They may be considered, indeed, from their proximity and general resemblance, as constituting one single coal-region; although, as will hereafter be explained, there is great difference in the superficial character of the country which they respectively traverse. There is a difference, also, in their history, and in their statistical relations; which renders it necessary they should be treated of separately and somewhat in detail.

The Mauch Chunk and Schuylkill coal-field commences near the river Lehigh, on the east, and reaches westerly to the left bank of the Susquehanna, extending thus about seventy miles in length, while it is only from one to five miles in width, being pressed in between Broad mountain on the north, and Sharp mountain on the south. These mountains, and the coal-field itself, are penetrated more or less by numerous streams, particularly the Swatara, the Schuylkill and its branches, and the Lehigh, affording outlets for the coal, and natural passes for the location of canals and rai-lroads, which pervade the district in all directions. But there is room for distinction as to the different parts of this field, in regard to the position of the coal, its quality, the mode of working it, and the means of its conveyance to market.

One portion of this field, its western extremity, on the Swatara, and near to the Susquehanna, is not accessible for the Atlantick trade, in competition with the residue; and therefore, although it has a limited market in the interiour, it is not possessed of the same general interest and importance as that which is watered by the Schuylkill and Lehigh, and need not occupy our attention.

At the eastern extremity of the field, are the works of the Lehigh Coal and Navigation company, which are, in many respects, peculiar, and are conducted on a scale of great boldness of design, and comprehension of enterprise. Disregarding the obvious outlets of the basin by the waters of the Schuylkill, they have ascended the mountain-barrier to its very summit, entered the coal-field by a rail-road, and thus diverted the coal from its natural channel to the waters of the Lehigh at Mauch Chunk. To effect this object, Messrs. Josiah White, Hazard, and Hauto, having acquired the property of the Mauch Chunk mines, obtained an act of incorporation with mining and trading privileges, and undertook the task, which had repeatedly before been attempted without success, of rendering the river Lehigh navigable. To enable them to accomplish this, the state ceded to them the sole jurisdiction of this river, for the distance of eighty-three miles, and the free and uncontrolled use of its waters. This grant has rightly been deemed since an improvident one; but the company proceeded to execute what they had undertaken with a spirit worthy of the enterprise. At an expense of about two millions and two hundred thousand dollars, they made their mines accessible to the river Lehigh, and opened the river itself, by a series of works, considered the best of their class in the United States.

During the year 1834, the freight transported on the Lehigh canal, amounted to 129,083 tuns, of which 106,518 tuns consisted of coal, and the residue of flour, iron, lumber, stone, and other articles of merchandise.

The coal of the Lehigh company, at least at their old and principal works, forms an immense mass of carbonaceous matter, intermixed with alternate layers of earth and slate. This deposite they *strip*, or uncover, by digging off the superincumbent earth, so as to leave bare the mass of coal, as in a clay-field; and thus the coal is mined. It is conveyed a short distance up the ridge of the mountain top, thence it ascends by means of an inclined plane, and a railroad upwards of eight miles in length, to a *chute* of seven hundred feet in two hundred and fifteen of perpendicular height, at Mauch Chunk, when it is embarked in the *navigation* of the Lehigh. This rail-road, being the first of any extent ever constructed in the United States, has in years past attracted the attention of travellers on this account; as also from the interesting fact of a descent on a rail-road for eight or nine miles, by the mere specifick gravity of the cars. It is also curious, in another point of view. Enormous trains of loaded coal-cars descend by gravity, to the head of the *chute*, after which the empty cars are to be returned to the mines and reloaded. They are accordingly drawn up the inclined plane by teams of mules; but these animals cannot be induced, either by persuasion or force, to descend the plane on foot, and it becomes necessary to provide cars, in which they may ride down, and which they very contentedly draw up again, together with the empty coal-cars. Circumstances like these give zest and piquancy to the inspection of the works of this Company; the relish of which is enhanced by the beauty and sublimity of the surrounding scenery, mountain after mountain stretching out beneath your eye, as you glide in your self-moving carriage along the descending side of the long steep ridge, overhanging the bright village of Mauch Chunk.

But the most interesting and valuable part of the coal-field is the central or interiour track, known as the Schuylkill Region, which is twenty miles long, and from three to four broad. In this region, the numerous headquarters of the river Schuylkill have cut boldly through the strata of coal, presenting a succession of elevated summits and deep ravines, admirably fitted for extensive mining operations. Here the coal is in veins, generally having an inclination or dip to the south, and consequently reaching the surface, when they are discovered by the depression of the soil over the coal in the process of decomposition, and by the cropping out, as the black dirt, which often appears at the surface, is termed. The dip is an angle of from forty to sixty degrees, the vein descending to an unknown depth. The beds vary in thickness, from one or two up to thirty feet. Those of from five to twelve feet are considered the best, as they can be worked with greater facility and profit; because they can be so propped and roofed, as to enable the miner to remove all the coal, without any hazard; while those of twenty or thirty feet must be worked in *chambers*, and large pillars of coal be left to support the roof; and even then the miners are exposed to injury from falling fragments or masses of the mineral. It is the universal practice in this region to *undermine*. As the veins generally dip in the direction of the mountain-sides, the mode of working in the interiour of the mine is regulated in part with reference to this fact. They run a *drift*, or tunnel, into the mountain above the water-level, and construct a rude rail-road upon its floor, and then pierce the seam of coal horizontally for a convenient distance; by which means the entire *breast*, as it is called, of the seam is exposed; and the miners work up the acclivity until they reach the summit or *outcrop*, throwing the coal behind them, where it is loaded into cars, drawn out by horses, screened and separated into the different sizes, and conveyed to the landings, or shot at once into canal-boats. In some cases, very ingenious mechanical contrivances are used in screening the coal; of which a very perfect example is to be seen at the station of the Delaware Coal company.—Hitherto the veins have been worked almost exclusively from the water-level upward; and instances occur, of two, three and four seams of coal, one above another; but experiments are now in train for pursuing the veins in the opposite direction downwards, by sinking shafts below the water-level, and clearing out the water through the agency of steam power, as in England.

There is a great diversity in the quality of the coal in the various parts of this basin, and even in a single region of it. In his very able report, Mr. Packer speaks of this point somewhat inaccurately. He alludes to the fact that some of the coal ignites more readily than the rest; and that the red-ash coal is by many regarded as of superiour quality; and then proceeds to say: "With these exceptions, there is little difference in the quality of the coal of the region; certainly no more than in trees of the same species, growing upon the same soil, or in coal taken from different parts of the same mine; and if coal of a superiour or inferiour quality be found in market, it is only because the vender has been more or less careful in freeing it from slate or other impurities."—This is far from being correct. If the writer had said that there was the same difference in quality, as between trees of different species, say walnut, oak and maple, growing upon the same soil, it would have been a more just representation of the fact. This truth is perfectly notorious to those who are familiar with the coal region. Anthracite is now divided, for practical purposes, into three classes: that which burns freely and leaves a residuum of red ashes; another harder and more difficult to ignite, leaving a residuum of white ashes; and purchasers of coal for consumption can rely upon this as an easy and conclusive test of its quality. The Lehigh coal is white-ash, less easy of ignition, but esteemed for manufacturing purposes: the Schuylkill coal of the better mines is red-ash, and the most valuable for domestick use. Very frequently, however, you will find veins of an inferiour quality, within fifty or a hundred yards of the best. In a transverse section of the several coal veins from the

Sharp to the Broad Mountain, made by Mr. James Wilde, of Pottsville, he lays down seventy-two different veins in the space of four miles. About one fourth part of the best of them are now worked, some much more extensive than others, and differing very materially in quality; and we feel confident that one half of the whole number cannot be worked until the others are entirely worked out, or at least worked so deep below the water-level, as to enhance greatly the expense of mining. Besides the difference in the purity of coal from different veins near to each other, there may be remarked this general difference; that, commencing at the southerly termination of them in the Sharp Mountain, the coal in the vein as you proceed north to the Broad Mountain, gradually becomes harder; and also, proceeding east towards Mauch Chunk it grows harder; while proceeding west beyond Minersville, it becomes softer, until in the neighbourhood of the Susquehannah, it becomes too soft and brittle for profitable transportation. This view of the subject is confirmed by reference to the weight of the coal, in the different parts of the field. Thus, at Mauch Chunk, its specifick gravity is 1,494; on the waters of the Schuylkill, in and about Pottsville, it is 1,453; and on the Swatara it is 1,400. We make these remarks, of course, without reference to the fractures or *faults*, which occur in a vein occasionally, owing to the imperfection in the formation of the coal, a disturbance of it by great natural convulsions.

And this leads us to another consideration of great practical importance to the consumer. The veins have a uniform range, longitudinally with the basin, north seventy-two degrees east, so that whenever a valuable vein is opened in one tract of land it can be traced to the lands adjoining; and the more celebrated veins have been opened in many places for several miles beyond the first pit. Such are the Peach Mountain, Spohn, Lewis, and Gate veins, which were opened before rail-roads were constructed, at points convenient for conveyance by turnpike-road to the landings at mount Carbon. By the introduction of rail-roads, these veins became accessible at various places in the Schuylkill valley; and there are examples of a vein thus traced and identified for the space of ten miles. This fact shows the necessity of buying coal with reference to the vein from which it is obtained, without being governed exclusively by the name of a particular pit, mine, or property; for it is by regarding the mine, rather than the vein, that retail venders of anthracite coal, from the Schuylkill region, have fallen into so much idle competition of names, and quackery of advertisement, for the purpose of drawing customers. Whoever buys red ash coal, prepared for the market by the Delaware Coal company, the North American, or any of the respectable individual proprietors or miners in the Schuylkill Valley, may rest assured that he has a good article and the best of anthracite coal for domestick consumption.

The Schuylkill region seems to have been marked by nature, for individual enterprise; and the State was careful to keep this object in view, in the incorporation of the Schuylkill Navigation company, on whose canal the coal is conveyed to Philadelphia for distribution along the Atlantick. The history of this canal, as recorded in the annual reports of the officers of the company, and beginning with their Address in 1820, in which they state their anticipation of the vast benefits to result from its construction, down to the Report of the last year in which their flattering anticipations are so fully realized, presents a fine example of the publick good which was achieved by publick spirited men, pursuing their own advantage by liberal expenditures of their wealth, in modes still more conducive to the publick advantage; and it affords one of a thousand contradictions to the mad outcry against corporate investments of property, issuing from that extravagant spirit of ultraism in all things, good or evil, which at this time agitates the publick mind in one part or another of the United States.

The Report of the company, for the year 1834, presents the following progressive increase of business, omitting the earlier year of its incompleteness:

Years.	*Total Tunnage.*	*Tuns Coal.*	*Total Toll.*
1826	32,404	16,767	$43,108 87
1827	65,501	31,360	58,149 74
1828	105,463	47,284	87,171 56
1829	134,524	52,973	120,039 00
1830	180,755	89,984	148,165 95
1831	196,413	81,854	134,005 92
1832	327,921	209,271	264,829 70
1833	445,849	252,971	325,486 63
1834	395,720	226,692	299,841 05

Commensurate with this augmenting business of the canal, has been the prosperity of the Coal Region, of which it is the outlet. It is an open highway, free to all the world, at the regular rate of tolls. Consequently, the navigation of it is in individual hands, partly of the proprietors of mines, who convey their own coal to market, partly of persons who pursue the business of boating alone, depending on freight from proprietors or undertakers of mines. The mines, also, are in the hands of private corporations, companies, or individuals, invited to the scene by the facilities it affords, in its natural and artificial features, for the prosecution of individual enterprise; among which persons, if any single one may, without derogation to the rest, be signalized for his active and intelligent usefulness, it is Mr. John White, the founder and controlling spirit of the Delaware Coal company. The consequence of all this has been the rapid growth of a flourishing population, of which Pottsville is the centre, strongly reminding the beholder of the similar results of well-applied and well-combined capital and industry, as exhibited in the correspondent case of Lowell in Massachusetts.

The immense business of the Schuylkill valley, it is also interesting to observe, has been growing up simultaneously with that of Lowell, in about the same space of time. Indeed, the prosperity of the manufactories of Lowell, and that of the collieries of the Schuylkill valley, are much more intimately connected, than a superficial observer, looking only to the distance of the two places one from the other, would be prone to imagine. Coal was known to abound in this region, so early as 1790, and perhaps before; and the mines at Mauch Chunk were partially opened prior to the year 1800. It was used to a very limited extent by some of the blacksmiths in the neighbourhood; but not esteemed as of much value. During the war of 1812, however, many intelligent individuals, in that part of Pennsylvania, had become convinced of the value of anthracite; and serious attempts were unsuccessfully made to introduce it into the market by Mr. Charles Miner, of Wilkesbarre, and by Mr. George Shoemaker, of Pottsville, about the same time. After which, it does not appear that any considerable quantity of anthracite was taken to market, either by the Schuylkill or Lehigh, until 1820, when the Lehigh company conveyed three hundred and sixty-five tuns to Philadelphia. This may be considered, therefore, as the commencement of the business. What progress it has since made, may be partly judged by the table we have given of the transportation on the Schuylkill canal; to which we proceed to add some other statistick facts bearing on the same point.

The Schuylkill canal affords employment to 370 boats. There were sent to market in 1834, by the Schuylkill, 224,242 tuns of coal, and 106,244 tuns by the Lehigh. The value of fixed improvements connected with the Schuylkill and Lehigh coal-field, is estimated as follows:—

	Miles.	Cost.
Lehigh Navigation	46	1,546,094 96
Former River Improvements		155,420 80
Rail Road to Summit Mines and laterals	16⅛	59,766 39
Room Run Rail-Road	8¼	123,000 00
Schuylkill Navigation	108	2,966,480 13
Western Branch Rail-Road	15	185,000 00
Lateral Roads connected with the above	10½	31,500 00
Norwegian or Mount Carbon Rail-Road	9	95,000 00
Laterals connected with the above	1½	5,250 00
Mill Creek Rail-Road	4	15,000 00
Laterals connected with the above	7	11,700 00
Schuylkill Valley Rail-Road	10	60,000 00
Laterals connected with the above	11⅛	19,200 00
Navigable Feeder of the Union Canal and dam	21	164,364 38
Pinegrove Rail-Road	4	20,561 25
Continuation of same	2½	7,500 00
Lyken's Valley Rail-Road	16	90,000 00
Little Schuylkill or Tamaqua Rail-Road	20	225,557 11
Lateral Branches, single, double and treble tracks	6½	
Delaware Division of the Pennsylvania Canal	60	1,430,211 85
Total	377	$7,211,606 07

Number of wagons or Rail-Road cars in the first district 2354 at $70 each	$164,780 00
Boats employed by individuals & companies, 980 at $500 each	490,000 00
92 colliery establishments, including working capital, utensils, horses, mules, &c. &c. at $4,000 each	368,000 00
100,000 acres of land at $40 per acre	4,000,000 00
	$5,022,780 00

Add to this, the borough of Pottsville, the towns of Port Carbon, Minersville and Schuylkill Haven, and other villages, as Mauch Chunk, Summit Hill, Tamaqua, Patterson, Tuscarora, St. Clair, New Castle, Middleport, Mount Carbon, Pinegrove, Coal Castle, Llewellyn, and others, the property in which is valued at three millions of dollars, and we shall then have some idea of the fruits of the Coal business in the coal-field of the Schuylkill and Lehigh.

We come now to the second coal basin, that of Beaver Meadow, Shamokin, and Mahoney. This, being not yet opened to the publick markets, does not afford so much matter of observation and remark as the first basin; but still it is not devoid of interest. This coal-field occupies the summit of highest ground between the waters of the Lehigh and Schuylkill on the one hand, and those of the north branch of the Susquehannah on the other, in the midst of a continuous range of double mountain barrier. Its obvious outlets by water are the Mahoney, flowing into the Susquehannah, and the Beaver Meadow creek, into the Lehigh. The whole basin, as far as regards its form, and the quality and formation of its coal, greatly resembles the one already described; but does not present the same facilities for access to tide water. The veins appear to be of great thickness, and capable of affording an abundant supply of coal, whenever the demand shall be adequate to overcome the difficulties in the way of its reaching the market. There is in this region, one publick improvement of striking boldness.

We allude to the Danville and Pottsville rail-road, completed as far as Girardsville, a town which Mr. Girard willed to have exist in the heart of this wild region, and which therefore exists. This road is a striking instance of what human art can accomplish, in overcoming natural difficulties. There is no publick work in Europe surpassing it in grandeur of design, or beauty of execution. We specify, in illustration, the tunnel, and inclined planes, by which the great elevation of the Broad mountain is surmounted. This tunnel, perforated right through a sharp high ridge, is eight hundred feet in length, 10 in height, and 10 in width, with a superincumbent mass of mountain thirty-five feet in height above it. Of the succession of inclined planes, some are self moving, regulated by *wind-breaks*, or otherwise; and one of them, acted upon by a stationary steam engine, has a descent of sixteen hundred and twenty-five feet, at an angle of about eighteen degrees, in a perpendicular elevation of three hundred and forty-five feet; and the ease and safety, with which you descend this stupendous plane, are as remarkable as the prospects before you, when you step into the car to descend, is appalling to the sense and the imagination. This road will run through the coal regions of the Mahoney and the Shamokin; and in addition to opening this coal to the consumer, will form a great thoroughfare for the merchandise, produce, and the general traffick of the country, and a line of communication between the waters of the Schuylkill at Pottsville, and those of the Susquehannah at Danville and Sunbury.

It remains that we speak of the third coal-field—that of the Wyoming valley and Lackawanna. In this region, the coal beds are generally more accessible than those of the other two fields, being exposed in a multitude of localities, by deep ravines, abrupt precipices, and small streams; and in some places the coal forms the bottom of the Susquehannah and the Lackawanna. According to the representations of Professor Silliman, who explored this valley, the strata would appear to run transversely across it—forming a series of elliptical curves, and dipping from either side of the boundary in the direction of the waters. The coal is heavier and harder than that of the other two deposites. There is one particular in which this coal region differs greatly from others.—On the Schuylkill and the Mahoney, the surface of the earth presents a thin, barren, steril soil, common to the mountain-lands of Pennsylvania; while the beautiful and fertile valley of the Wyoming is covered with a deep loom, and is universally celebrated as the very garden of the state. It is alike rich in the agricultural productions, and in mineral treasures; its surface and its interiour equally invite and reward the hand of labour and the combinations of skill. Its historical reminiscences bespeak the interest of the patriot; poetry has made to be classical, scenes which nature had already invested with undying charms; the statesman sees in its rich ores and its fertile soil, one of the great economick resources of the country; and there is none, who ever looked on its verdant fields, and sunny streams, and picturesque hills, whose memory does not revert with delight to "Susquehannah's vale, fair Wyoming."

The coal of this region has been used more or less, in the immediate neighbourhood, from the year 1768 to the present time. It is not yet very extensively introduced into trade, the quantity conveyed to market from the Lackawanna in 1833, having been 111,777 tuns; that in 1834, only 43,700 tuns; but it is the field, from which the interiour of New York is naturally to be supplied; and as the publick improvements made or contemplated in that quarter of the state proceed to their completion, more of this coal will find its way to the consumer. At present, the principal works are at Carbondale, in the valley of the Lackawanna, belonging to the Delaware and Hudson Canal and Coal company. This company was formed by Messrs. Maurice and John Wurtz, and is another remarkable instance of the greatest publick benefits rendered, and the noblest enterprises accomplished, by well-directed capital and enterprise acting through the means of a private corporation.

Those gentlemen conceived the great design of constructing a rail-road and canal from the coal-beds on the Lackawanna to the Hudson, through a dense wilderness, and over a mountain 855 feet in height above the level of the Lackawanna. This magnificent work has been finished, at an expense of nearly two and a half millions of dollars, to the immense advantage of the contiguous regions of Pennsylvania and New York.

Of the property employed and invested in the coal trade of this basin, the following is an estimate:—

Canal-boats and rail-road cars,	$157,500
Colliery establishments, utensils, horses, &c.,	90,000
Carbondale,	250,000
Honesdale,	120,000
Coal-lands, &c.,	240,000
Total,	$862,500

Taking into view all the improvements, and property connected with, and dependent upon the anthracite coal trade of Pennsylvania, in the three great coal-fields, we have:—

Rail-roads and canals made by companies and individuals, including also some parts of the state canals, 489 miles,	$9,750,837
Collieries, boats, cars, &c.,	1,270,280
Capital invested in coal-lands,	4,900,000
Mining capital,	480,000
Value of towns in the coal-fields,	3,875,000
Total,	$19,176,217

This, of course, is independent of the value of storehouses, wharves, landings, and other improvements consequent on the coal trade, in Philadelphia, New York, and other places; and also of the value of vessels, and the other capital employed in the conveyance of it by shipping, and its general distribution.

The following table exhibits a statement of the several varieties of anthracite coal, brought to market in each year since the commencement of the business:—

Year.	Receipts of the Lehigh. Tuns.	Receipts of the Schuylkill. Tuns.	Receipts of the Lackawanna. Tuns.	On hand at tide-water, first of April. Tuns.	Total on hand 1st of April, & bro't to market during the year Tuns.
1820	365				355
1821	1,073				1,073
1822	2,240				2,240
1823	5,823				5,823
1824	9,541				9,541
1825	28,393	5,306			33,699
1826	31,280	16,835			48,115
1827	32,074	29,493		5,000	64,798
1828	30,232	47,181		8,000	85,292
1829	25,110	78,293	7,000	12,000	122,403
1830	41,750	89,984	41,000	18,000	192,734
1831	40,966	81,854	54,000	50,000	226,820
1832	75,000	209,271	84,500		363,871
1833	123,000	250,588	111,777	60,000	545,588
1834	106,000	224,100	43,700	120,000	493,700
1835	131,250	335,685	90,000	75,000	631,935

We have received, from a competent source, an estimate of the quantity, which would probably be brought to market in the year 1835, as follows:—

By the Schuylkill canal	350,000 tuns.
Lehigh do.	130,000
Delaware and Hudson do.	95,000
Total,	575,000*

So that the exports of coal from Pennsylvania, the past year, will have been not far short of half a million of tuns, bringing a return of two millions of dollars to that state. And if we take into consideration, as well the canal-boats employed in the interiour, as the vessels employed in the river and sea navigation, for the transportation of this coal annually, we shall find that it cannot fall short of 60,000 tuns burden of all kinds, constituting already a high-

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* The actual quantity of coal sent to market in 1835, was, from

the Schuylkill Region,	335,685
Lehigh,	131,250
Lackawana,	90,000
Total,	556,935

Making 556,935 tuns, which we have added to the above table to make it complete.—*Ed. M. Jour.*

ly important branch of our navigation, and destined certainly to a great and constant increase.

In fact, vast as is the amount of capital embarked in it already, this trade is but in its infancy. In England, where coal is almost the only fuel, and is used for all purposes, the consumption rather exceeds one tun for each inhabitant of the kingdom.—It is not to be presumed that the same state of things, and the same proportion of demand for coal, will soon exist in the United States. Still, the amount consumed must and will gradually advance. We shall continue to import coal from Europe, from England especially; and we shall import it also from Nova Scotia. Of such coal, however, the quantity imported by no means keeps pace with the quantity mined at home. The foreign coal imported into the United States in 1833, for instance, being only 84,144 tuns, while, as we have seen, the anthracite coal sent to market from Pennsylvania alone, amounted in the same year, deducting what was on hand from the year before, to nearly five hundred thousand tuns. We have not any exact knowledge of the quantity of coal produced in Virginia; and cannot therefore judge precisely how this will affect the question. But persons who are not prone to be over sanguine in their anticipations, have calculated that of the population of the United States, residing upon, or adjacent to tide water, amounting to about 4,000,000 of souls, one half part may be reckoned upon for the consumption of domestick coal, so soon as the market is fully and equally supplied. However this may prove the economick value of anthracite coal, in its various applications, cannot be too highly rated.

At the present time we are chiefly familiar with anthracite as the means of heating dwellings or manufactories. It is but just beginning to make its way into other uses, for which fuel is needed. Thus in the numerous steam-engines used on our rivers and sounds, and on our rail-roads, wood continues to be generally employed. The Baltimore and Ohio Rail-road company is the only one, so far as we know, which uses anthracite for its locomotive engines; they continue to be satisfied with the experiment, and will have consumed, the past year, about 3,000 tuns of the best red-ash coal of the Schuylkill.—Hence, in our steam-engines, is a vast field for its consumption. In Philadelphia, New York, and Providence, it is understood that very small coal and coal dust, which heretofore could not obtain a market, is employed to some extent in the steam-engines and manufactories. And the same kind of coal is now used by lime-burners in the manufacture of lime, as also, in a few places, for bricks.—Experiments have been tried too, with some success, for the smelting and refining of iron-ore with anthracite. If it should come to be of general application in those and the like processes of art, the demand for it, and the consequent augmentation of the trade, will render the mineral treasures of Pennsylvania more and more a publick blessing to the whole Union.

In the close domestick intercourse of the different states, and their mutual dependance and reliance on each other for the aliment of industry, and the procurement of the comforts and luxuries of life, we have, under the favour of God, a sure safeguard for the preservation of the republican institutions transmitted to us by our fathers. Of the great fabrick of the Union, Pennsylvania has been, not unjustly nor unaptly, denominated the key-stone state. It is so, not solely by reason of its geographical position and its magnitude, but on account of its natural resources also, alike needful to all parts of the country. We heartily congratulate that great state, as well for the territorial advantages it possesses, as for the energy which it has displayed in rendering them available; and we hope and believe that its future prosperity will correspond to its natural and acquired resources, and to the industry and enterprise of its people.

THE MISSISSIPPI BOAT-SONGS.

The Mississippi and Ohio, after the St. Lawrence, are perhaps the only part of our country which can boast of its own native musick. The boatmen in the large flat boats and broadhorns, which are a species of arks, carrying sometimes two thousand bales of cotton, amuse themselves as they are floating down on the father of waters, with a species of instrumental musick, which it is said is characterized by a peculiar wildness and pathos. They perform this on a bugle, of a long, conical shape, constructed of small wooden staves which produces sounds not inferiour, it is said, to the trumpet, and much sweeter. On a beautiful, clear and still morning, in that balmy climate, the echoes of the boatmen's trumpets, prolonged at a great distance through the neighbouring woods and groves which border the rivers, are said to possess a charm and enchantment, which none can realize but those who have heard it. There is no cord which will vibrate sooner to the heart of a Kentuckian or Tennessean, when in a distant land, than the reminiscence of these native but rude ballads, to which his ear had been familiar from infancy, and which he associates with all the grandeur and beauty of the scenery of his home. The subject is beautifully alluded to in the stanzas from the Frankfort (Ky.) Commonwealth.—*Eve. Star.*

THE BOAT-HORN.

Oh boatman! wind that horn again!
For never did the joyous air
Upon its lambent bosom bear
So wild, so soft, so sweet a strain.
What though thy notes are sad, and lone,
By every simple boatman blown!
Yet, could I list from eve till morn,
Delighted to the simplest horn!
How oft in boyhood's cloudless day
I've stroll'd by wild Ohio's stream,
Marking his silvery billows play,
Bright with the sun's declining beam,
While some lone boatman from the deck,
Musing on coming storms, and wreck,
Pour'd his soft numbers to that tide
Where all his hopes, his fortunes ride,
As if to woo the fickle wave
From wreck, and storm, his boat to save!
Delighted nature drank the sound,
Enchanted echo bore it round
In whisper's soft, and softer still,
From hill to plain, and plain to hill,
And e'en the reckless, frolick boy,
Elate with hope, and wild with joy,
Who gamboll'd by the river's side,
And sported with the fretting tide,
Feels something new pervade his breast,
Chain his light step, cut short his jest,—
Bends o'er the flood his eager ear
To catch the sounds far off, and dear,
Drinks the sweet draft, but knows not why
The tear of rapture fills his eye,
And can he now, to manhood grown,
Tell why those notes, simple, and lone,
As on the ravish'd ear they fell
Bound every sense in magick spell?
There is a *tide* of feeling given
To all on earth, its fountain, Heaven,
Beginning with the downy flower,
Just ope'd in Flora's vernal bower,
Rising creation's orders through
With bolder murmur, brighter hue.
That *tide* is sympathy! its ebb and flow,
Give life its gleam of joy, its shades of wo.
Musick, the master-spirit that can move
Its waves to war, or lull them into love,
Can charm from beauty's eye the bitter tear,
And lift from sorrow's heart its load of care,
Can cheer the sinking sailor on the wave,
And bid the soldier on, nor heed the grave;
Inspire the fainting pilgrim on his road,
And elevate his heart and soul to God.
Then boatman! wind that horn again!
Though much of sorrow mark its strain,
Yet are its notes to sorrow dear!
What though they wake fond memory's tear!
Tears are memory's sacred feast,
And rapture oft her chosen guest.

THE SEMINOLE WAR.

The Seminole nation of Indians are scattered in various settlements or villages throughout the middle portions of the peninsula of East Florida. Some of their villages extend as far south as Sanybel river and cape Roman. There are Indians, however, scattered all along the western side of the peninsula, from near Tampa bay, to the south of cape Roman. But those living in that direction are in some measure connected with the Spaniards, and are frequently employed by them in carrying on their fisheries. They live with the Spaniards and Spanish negroes, who take their wives from among them. They seem to be independent of the Seminole nations, yet friendly to them, but so jealous of the Americans, that no confidence is to be placed in them.—These Indians have canoes, those of the nation have none. The fisheries are owned by the Spaniards, and the dried fish is taken to the Havana market. The Seminoles have frequent intercourse with them, and employ their men occasionally to transport them across the water, from one key to another. The whole country is generally low, and covered with an undergrowth of saw palmetto, which grows from five to seven feet high, and almost impenetrably thick. This undergrowth occurs as well in the oak hammocks, as in the pine woods.

In Mr. Everett's report, made to Congress in 1834, the number of the Seminole Indians is estimated at five thousand. By the report of the secretary of war, however, made during the present session of Congress, they are estimated at three thousand, including men, women, children, and negroes; but it is added, that this estimate is conjectural.

The present war, which the Seminoles are waging with so much barbarity, originated in their refusal to fulfil a treaty, by which they had agreed to emigrate to the west of the Mississippi. That treaty, under the authority of the government, was concluded at Payne's Landing, Florida, by Col. Gadsden, May 9th, 1832. Its conditions were, that all the lands in Florida, belonging to the Seminoles, should be ceded to the United States, and that that tribe should remove to the country west of the Mississippi[*] within three years from the ratification of the treaty. It was also stipulated that the emigration should commence early in 1833, so that a proper proportion should be removed in each of the three years. General Thompson, the agent, repaired to his agency, and commenced arrangements agreeably to the provisions of the treaty. On the 28th of October, 1834, the war department received the first intimation from that officer that the Indians were disinclined to remove. The objections urged by the Indians were vague and groundless, and the department informed the agent that their demands could not be submitted to. The military forces in Florida, were at this time directed to be increased, and General Clinch was ordered to take the command. A communication or *talk* from the president, was transmitted to the Indians through General Thompson, in which the views of the executive were fully expressed, and they were explicitly told that the stipulations of the treaty must be carried into effect.—They received the communication in apparent good humour, but still manifested no inclination to remove. The time defined in the treaty, in which they were to remove, having expired in May, 1835, they were allowed six months longer to prepare. These six months having expired, they were notified to bring in their cattle and horses to be sold on the 1st and 15th of December last, agreeably to the stipulations of the treaty, providing that these animals should be surrendered, in order to avoid the expense of removing, and an adequate compensation made therefor. Charles Onathla, a chief, friendly to the whites, assented to the measure. But others, determined to die arms in hand on their native soil, caused him to be assassinated, appointed a successor of opposite sentiments, and immediately commenced a course of hostilities against the whites in their vicinity.[†]

On the requisition of General Clinch six additional companies of U. S. troops were ordered into Florida, which augmented the forces to ten companies. Six of these companies were concentrated at fort King, three at fort Brooke, and one stationed at Key West. In October, General Clinch was authorized to require four more companies of the regular army to join him; and in the latter part of November, the governor of Florida was requested to place at his disposal any military force he might require, and orders were given through the ordnance department to furnish five hundred muskets and the necessary equipments to the militia. These forces were considered sufficient to procure the quiet removal of the Indians, since they had not, as yet, exhibited any movements of general or concerted hostility.

Such a determination, however, soon became apparent, in the overt acts of violence and bloodshed which frequently occurred in the Indian district. The Indians began to rally, and to arm themselves for war. They pillaged the plantations of the whites, burnt their buildings, and murdered their owners and dependants. As the determination of the Indians to fight and die rather than leave their ancient homes, became known, the white inhabitants fled in every direction, and in every condition and circumstance, for protection. Many whole families were cut off by the scalping-knife and tomahawk, root and branch, their houses burnt, and plantations laid waste. On the 18th of December, a body of U. S. troops, marching to Micanopy, were attacked by the Indians, and their baggage-wagons were captured, and three men killed and many wounded. On the 20th, however, they had another brush with the Indians, retook their baggage and killed several warriours. On the 28th, General Thompson, who had too much confidence in the sincerity and friendship of the Indians, ventured out of the lines of fort King, and went to dine, with nine others, at the sutler's house, about a quarter of a mile from the camp. While there, the Indians rushed upon them and poured an immense volley of musket-shots through the door, killing five of the number. The rest escaped through the windows. General Thompson, the agent, received fifteen bullets, and all the victims were scalped and shockingly mangled. Osceola, commonly called Powel, the chief of the Seminoles, led the attacking party.

On the same day, two companies under the command of Major Dade, were inhumanly massacred within a few miles of the same camp. These troops, consisting of one hundred and twelve men, had left Tampa bay with the view of joining General Clinch at fort King. The command entrenched every night, and had been beset by the Indians several times previously.—About ten o'clock, on the morning of the 28th, when about four miles from their halt, they were attacked, and received about fifteen rounds before an enemy was seen. Major Dade and the interpreter were killed at the first onset. Captains Gardiner and Frazer soon fell, and Lieutenants Bassinger, Henderson, Mudge, Keayes, and Dr. Gatlin were all slain. Lieutenant Henderson fired thirty or forty shot after his left arm was broken. In the second attack, Lieutenant Bassinger remarked:—"I am the only officer left, and, boys, we will do the best we can." "On the attack," says Major Belton, "they were in column of route—and after receiving a heavy fire from the unseen enemy, they then rose up in such a swarm, that the ground, covered as was thought, by light-infantry extension, showed the Indians between the files. Muskets were clubbed, knives and bayonets used, and parties clinched. In the second attack, our own men's muskets, from the dead and wounded, were used against them: a cross fire cut down a succession of artillerists at the fence, from which forty-nine rounds were fired—the gun-carriages were burnt, and the guns sunk in a pond. A war-dance was held on the ground—many negroes were in the field, but no scalps were taken by the Indians, but the negroes with hellish cruelty, pierced the throats of all whose loud cries and groans showed the power of life to be yet strong. The survivors were preserved by imitating death, excepting Thomas, who was partly stifled, and bought his life for six dollars, and in his enemy recognised an Indian whose axe he had helved a few days before at this post. About one hundred Indians were well mounted, naked, and painted.

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[*] The section of country set apart for the Seminoles, lies at the junction of the North Fork and Canadian streams, tributaries to the Arkansas, a few miles southwest of fort Gibson, in the western territory, and contains 2420 acres.

[†] Says a correspondent of the New York Courier: "My residence, for a number of years in their immediate vicinity—and frequent intercourse with their chiefs and people, has enabled me, as I think, to form a pretty correct conclusion upon the subject. The treaty by which they relinquished their possessions here, for larger and better, in the west, and under which they were to remove, was not unanimously assented to. Some few violently opposed it. Among these was Micanopy, the head chief of the nation, a stupid, stubborn, and obstinate old fellow, who, with all his stupidity, retains a large influence over the minds of his people, from their hereditary veneration for their legitimate prince. This man is under the most complete control of an artful, shrewd, and cunning negro, until lately his slave. This negro had acquired such an influence and ascendency, not only over his old master's mind, but over the minds of most of the other Indians, that he was chosen as one of the deputation to visit the western country intended for their future homes. This fellow is, by appointment of the old chief, governour of the Indian Negroes. To him all appeals are made by them, all controversies settled. He is judge and jury—consequently exerts great power and influence over his own people. These are estimated at about five hundred in number of grown persons. They are a band of lawless runaways, and the descendants of runaways, pirates, and banditti—nominally slaves, but, really for all the purposes they require, masters, exercising an unbounded sway over their more ignorant, pretended owners. You may judge of this by the reply of an Indian, who claims to own twenty-three of these masters. Some person attemped to pass some joke upon him. "You no need try fool me—I got real nigger sense," said he in so much English and with an air of triumph. These people have ever been violently opposed to removal. They believe, in the first place, that the signal for starting from their long concealment, would be to restore them and their children to their rightful owners, and they have been silently at work for the last two years in exciting the Indians to disaffection and resistance. How far they have succeeded, events have shown, and how violent and persevering have been their own efforts and determination, their barbarian ferocity sufficiently exemplified, on the fatal 28th. They are a powerful, muscular, and athletick race, averaging nearly six feet in height, hardy, and accustomed to exposure and privation, and in my view present the most formidable force that can be brought to act from the nation—uniting the Indian habits of woodsmen and hunters, with their more powerful bodily strength, and greater capability of endurance, as also the skilful use of the musket and rifle."

The number of savages is not known, though it is conjectured that there were six hundred or eight hundred. The spirit and bravery of this devoted little band, unfortunately availed but little against their unseen and barbarous foes. This horrid butchery finds but few parallels in the history of Indian warfare.

On the 31st of December, a body of two hundred and twenty-seven troops, under General Clinch, met a band of about three hundred Indians on the Withlacoochee river, about twenty-five miles from camp Lang Syne, and within a few miles of the Indian chief's town, where it was supposed the women and children were assembled. The Indians on one flank leaped from their hiding places, and formed boldly into line in front of the thicket, with Powell at their head. They charged furiously, but the fire of the whites drove them to their coverts. The battle continued over an hour. About forty Indians were killed and many wounded; the whites lost four men killed, and fifty-nine wounded.—Osceola, or Powell, the chief, it was supposed, subsequently died of his wounds received at this battle. About three hundred militia-men, under General Call, were present at this battle, but seem to have been panick struck at the first shot, and completely appalled by the yelling of the savages.

On the 12th of January, a company of two hundred mounted volunteers, under Colonel Parish, was attacked on both flanks by a body of Indians in ambush. Making an unsuccessful charge on horseback upon the enemy, they dismounted, formed in admirable order, and charged with great gallantry and success.—The Indians retreated with considerable loss.

A few days afterwards, Captain Hooker, on the lower Suwanee, finding the opposite bank of that river in possession of about *thirty* Indians, crossed over with *nine* men to attack them. As he landed, two of his men were shot down—one with nine balls, the other with five. With his remaining men he boldly charged on the enemy; and after a close and deadly contest of a few minutes, the savages were routed with severe loss!

On the 22d, a party of about twenty Indians made an unsuccessful attempt to capture two pieces of ordnance, which had been sent from Savannah, for the garrison of Picolata. The guard of twelve men repulsed them.

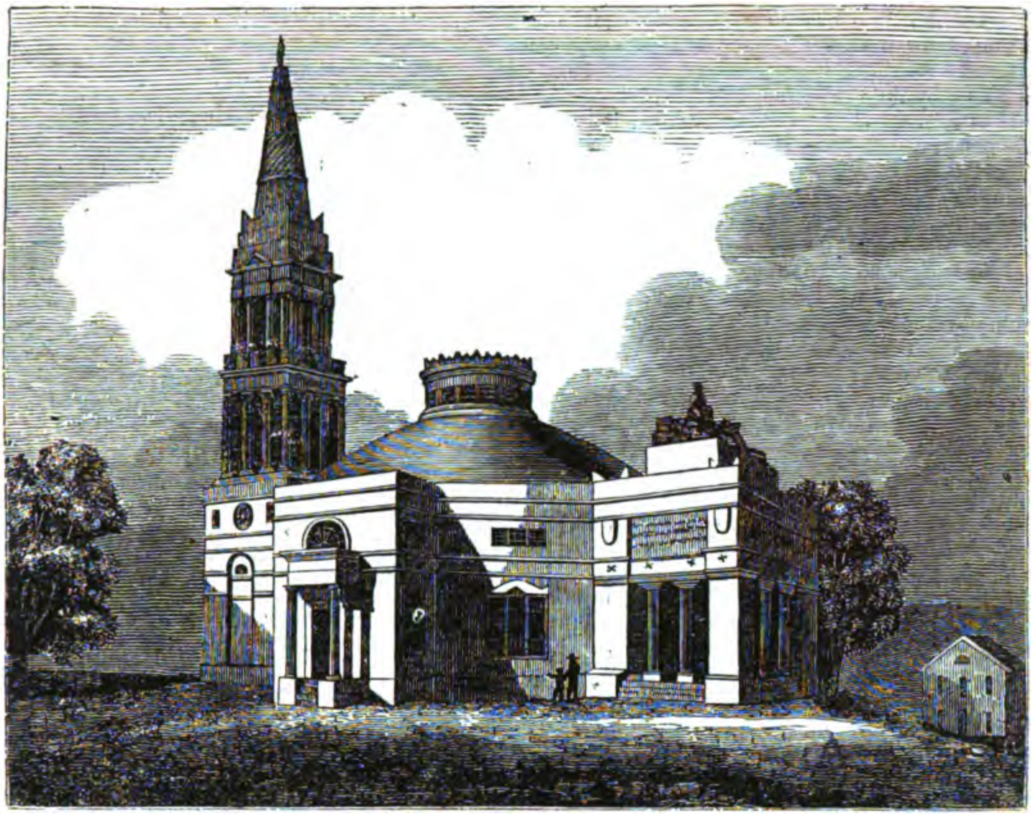
So great has been the audacity of the savages, and the extent of their operations, that they have even meditated the destruction of the city of Columbus, Ga. They expected to effect this by aid of the Creeks, but the plot was timely discovered, and effectual measures taken to defeat it. The chiefs of the Creek nation, however, early in February, pledged themselves to restrain their young men from passing into Georgia, and from committing depredations in that state.

It has also been reported that the Indians meditated the burning of Tallahassee, and that they at one time threatened an attack upon St Augustine. Indeed, every important point and valuable situation, every species of prize, are made the object of their wiliest attacks and circumvention. The details of their relentless barbarity, particularly on the southern and western coast of the peninsula, are full of deeds of blood and horrour, unexampled butchery and brutality. It is in that quarter, where such conduct should have been anticipated. We cannot easily conceive of worse specimens of human nature, than mixtures of the Spaniard, Indian, and Negro. It is doubtless from that quarter, that the Seminoles have derived much assistance, in the shape of arms, ammunition, and provisions.

A speedy and tremendous retribution is, however, awaiting them. As soon as it was intimated that the Creeks contemplated joining the Seminoles, General Scott was despatched to Florida, with full authority to call into service such numbers of the militia from the contiguous states, as he might deem necessary to put a prompt termination to the difficulties. The liberality and promptness of the southern states in raising men and money, and the efficient co-operation of the general government, are an earnest that our fellow-citizens in Florida are not to be tortured with impunity. South Carolina, Georgia, Alabama, Mississippi, and Louisiana have sent in their men and arms to the aid of the unfortunate Floridians, with highly commendable liberality and patriotism. Notwithstanding the country is well adapted to suit the offensive operations of the savages, yet, it seems impossible for them long to resist the accumulating force of our Southern citizens.

Towards the latter part of February, it was supposed that there were about five thousand troops collected in Florida, including regulars, militia, and volunteers. General Scott was at Picolata, forming a plan to surround the enemy, and to cut off their retreat into the everglades of the south. General Clinch was at fort Drane with about eight hundred men, and General Gaines had arrived at Tampa Bay with several companies of United States troops and Louisiana volunteers, amounting to *upwards of* one thousand two hundred in number. On the fifteenth of February, General Gaines, convinced of the necessity of a decisive stroke, moved with his troops in a southeasterly direction towards the river Allafia, where a body of several hundred Indians had been several weeks together. The Indians retired in a northeastern direction, and General Gaines followed in their trail. He passed through the scene of the massacre of Major Dade's command, and found seven officers and ninety-eight men of that unfortunate little band, and caused them all to be buried. The Indians had robbed them only of their arms; their money, trinkets, and keepsakes were still upon their persons. General Gaines passed the Withlacoochee at the upper crossing, and joined General Clinch on the 24th of February. Finding a scarcity of provisions, he immediately started to return to Tampa Bay by the lower crossing of the Withlacoochee, with only eight days' rations. On reaching that river, he was attacked on or about the 27th by about one thousand five hundred Indians as is supposed. He succeeded in beating them off, but considered himself in imminent danger. The banks of the river, it is stated, was literally lined with Indians for the space of two miles. The skirmishing continued across the river, until the 28th, when General Gaines, by showing only two hundred of his men enticed a large body of the enemy to come over, when he opened his cannon and musketry upon them, and destroyed about three hundred, with the loss, on his side, of eight killed and about forty wounded. On account of his distance from any regular post, the scarcity of provisions, and the numbers of the enemy, he was for many days in very imminent peril. He has shown himself, however, to be well acquainted with the character of his foe, and his operations have been crowned with success. He was joined by General Clinch with eight hundred men on the 4th of March, and prepared to cross the river in bold pursuit of the enemy. The result of this movement will have a material effect upon the war. The Indians were encamped about four miles from the river, protected by a breastwork of earth and facines. On the 5th, seventeen wagons of provisions were sent by General Scott, destined for General Gaines's army.

General Macomb left Washington about the first of March for the seat of war. Most of the distinguished officers of the army are now upon the spot.



MONUMENTAL CHURCH, AT RICHMOND.

The Monumental Church, at Richmond, was erected in 1813, on the spot where the theatre stood. It was dedicated on the 4th of May, 1814. The Rev. W. H. Wilder delivered the dedication sermon. It is an elegant edifice of an octagon form. The steeple, on the northeasterly side, is one hundred and thirty feet high. On the northwesterly side of the church, and adjoining it, is the monument, the foundation of which occupies thirty-six feet square, within the walls of which is engraved the following inscription:—

"In memory of the awful calamity, that by the providence of God, fell on this city, on the night of the 26th of December, in the year of Christ, 1811; when, by the sudden and dreadful conflagration of the Richmond theatre, many citizens, of different ages, and of both sexes, distinguished for talents and for virtues, respected and beloved, perished in the flames; and, in one short moment publick joy and private happiness were changed into Universal lamentation; this monument is erected, and the adjoining church dedicated to the worship of Almighty God, that, in all future times, the remembrance of this mournful event, on the spot where it happened, and where the remains of the sufferers are deposited, in one urn, may be united with acts of penitence and devotion."

The perspective view of the Monumental Church, from which the engraving presented in this number of the Magazine is taken, was drawn by William Strickland, F. S. A. Isaac Sturtevant, of Boston, was the master builder.

An account of the burning of the Richmond Theatre, will not, we trust, be considered out of place. It is compiled from the Rev. Timothy Alden's collection of American epitaphs and inscriptions, a rare and valuable work.

On Thursday night, the 26th of December, 1811, it appears that the theatre, on Shockoe hill, in Richmond, was attended by an unusual number of people. The pantomine, entitled *Agnes and Raymond, or the Bleeding Nun*, was to have closed the amusements of the evening. This had been translated for the occasion by Mr. Giradin; and many, who had seldom repaired to this place of recreation, now attended in order to witness its performance, principally through civility to their fellow-citizen. In the first act of this afterpiece, one of the scenes exhibited the cottage of a robber, which was illuminated by a chandelier. When the curtain fell on the close of the first act, and before it rose for the second, this chandelier was raised aloft among the oil-painted scenery. By a fatal inattention, the lamp was not extinguished! The fire instantly caught, spread with rapidity, and, in less than five minutes, the whole roof, as well as the suspended combustible materials, was in a blaze. "It burst through the bull's eye in front; it sought the windows where the rarified vapour sought its passage, fed by the vast column of air in the hollows of the theatre, fed by the inflammable panels and pillars of the boxes, by the dome of the pit, by the canvass ceiling of the lower boxes, until its suffocated victims in the front were wrapped in its devouring flame, or pressed to death under the smoking ruins of the building."

The imagination may better paint, than the pen of the writer describe, the unutterable anguish of the gay assembly. In one moment, hilarity and joy were exchanged for the most agonizing sorrow and distress, and a multitude of precious and immortal souls, at a time they little expected, was plunged into the world of spirits. Shrieks, groans, agony, and death, in its most terrifick form, closed the tragick scene!

The following is a list of the unhappy victims to this dreadful calamity, taken from the Gazettes published at the time, and corrected by the writer of this article in May, 1814, from verbal information received of sundry people at Richmond:—

From Jefferson ward, his excellency, George W. Smith, governour of Virginia, Miss Sophia Tourin, Miss Cecilia Tourin, sisters, Joseph Jacobs and his daughter, Miss Elizabeth Jacobs, Cyprian Marks, Mrs. Marks, the wife of Mordecai Marks, Miss Charlotte Raphael, daughter of Solomon Raphael, Miss Adeline Bausman, Miss Ann Craig, Mr. Nuttal, a carpenter, Pleasant, a mulatto woman, and Nancy Peterson, a woman of colour.

From Madison ward, Abraham B. Venable, Esq., president of the Virginia bank, William Southgate, son of Wright Southgate, Benjamin Botts, Esq., an eminent attorney, and his wife, Miss Arianna Hunter, Miss Mary Whitlock, Miss Juliana Harvie, Mrs. Sarah Heron, Mrs. Girardin and her child, Mrs. Robert Greenhow, Mrs. Moss, child of Baruch Judah, Mrs. Lesslie, Edward Wanton, a youth, George Dixon, a youth, William Brown, Mrs. Elizabeth Pattison, John Welch, a stranger, lately from England, nephew of Sir A. Pigott, Miss Margaret Copland, Miss Margaret Anderson, Miss Sarah Gatewood, Miss Mary Clay, whose father was then a member of congress, Miss Lucy Gawthmey, Miss Louisa Mayo, an orphan, Mrs. Gerard, Mrs. Eleanor Gibbons, Miss Ann Green, Mary Davis, Thomas Frazier, a youth, Jane Wade, a young woman, Mrs. William Cook and her daughter, Miss Elizabeth Stevenson, Mrs. Convert and her child, Martha Griffin, Fanny Goff, a woman of colour, Betsey Johnson, a free woman of colour, and Philadelphia, a man of colour.

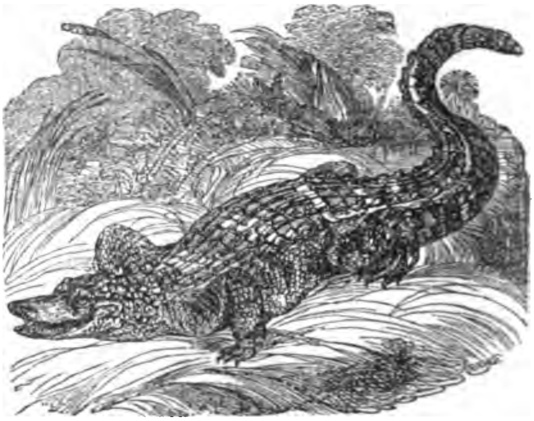
From Monroe ward, Mrs. Taylor Braxton, Mrs. Elizabeth Page, Mrs. Jerrod, James Waldon, Miss Elliot, of New Kent, Mrs. Joseph Gallego, Miss Sarah Conyers, James Gibbon, Esq., lieutenant in the Navy of the United States, Mrs. Thomas Wilson, Miss Maria Nelson, Miss Mary Page, Mrs. Laforest, and Mr. Almerine Marshall, of Wythe county.

To the foregoing, these are also to be added:—Miss Elvira Coutts, Mrs Pickit, Miss Littlepage, Jean Baptiste Rozier, Thomas Lecroix, and Robert Ferrill, a mulatto boy.

Many, who escaped with their lives, were much scorched in the flames, some were killed and others were greatly injured by throwing themselves from the windows, or by being trampled under foot in the attempt to escape with the crowd. Mrs. John Bosher, and Edward James Harvey, Esq., expired, soon after the dreadful catastrophe. Some are cripples, a considerable number has dropped into the grave, and others languished under the weight of disease, in consequence of injury sustained at the time of the melancholy conflagration. Am. Mag.

The mob hath many heads but no brains.

NATURAL HISTORY.



THE ALLIGATOR.

Crocodilus Lucius. Cuvier.

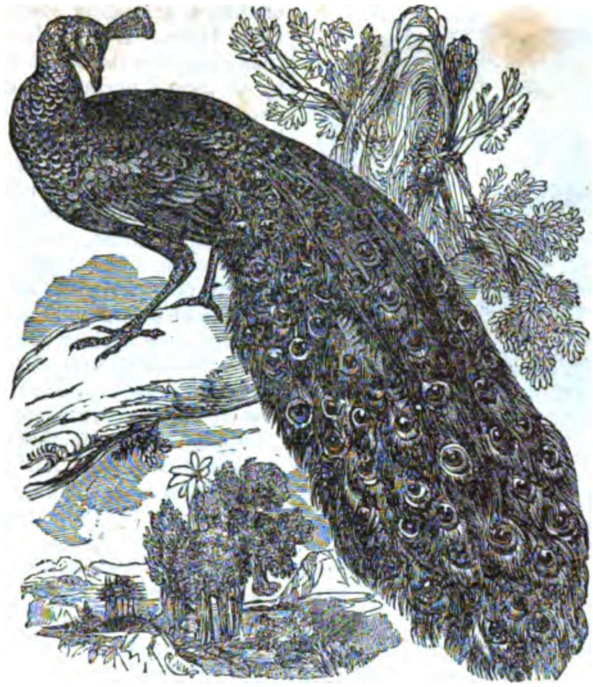
The enormous reptile from which this genus derives its name belongs to the same subdivision of that class as the agile lizard and the many-hued chameleon, with which it was comprehended by Linnæus under the single generick title of Lacerta. This group has subsequently been elevated to the rank of an order, consisting of numerous genera, among which the crocodiles are distinguished by the following characters. Their toes are five in number on the anterior feet, and four on the posterior; their sharp and conical teeth are arranged in a single series in each jaw; their tongue is flat, fleshy, and closely attached almost to its *very edge*; and their bodies are clothed with large, thick, square scales, the upper of which are surmounted by a strong keel, those of the tail forming superiorly a dentated crest, double at its origin.

The alligators constitute a natural subdivision of the genus, in which the snout is broad, blunt, and less produced than in the true crocodiles; the fourth tooth on each side of the lower jaw enters a hole in the upper when the mouth is closed; and the toes are only half webbed. They appear to be exclusively natives of America. The present species is distinguished by its broad and flat snout, with nearly parallel sides, united in front by a curved line; by the peculiar arrangement of its nuchal scales; and by the elevated internal margins of its orbits. Its colour is dark-brown above, and somewhat lighter beneath. It is one of the most dreadful scourges of the countries which it inhabits, preying upon all kinds of animals that come within its reach, and sometimes even upon man himself. It is found in the bays and rivers of Florida, in the Mississippi, and most of the rivers of the Southwest.

THE JAVANESE PEA-FOWL.

Pavo Javanicus. Horsf.

We are indebted to Asia for the most magnificent as well as the most useful of our gallinaceous birds. All the different species of fowls from which our domestick breeds originally sprung, together with the pheasants and peacocks that ornament our aviaries and museums, have been procured from the eastern parts of that continent, where they still exist in a state of nature, displaying their gorgeous plumage to



THE JAVANESE PEA-FOWL.

the rays of a tropical sun. Of these birds the pea-fowl are beyond all question the most highly favoured, in the graceful dignity of their form, the varied splendour of their plumage, the tasteful disposition of their colours, and the means of displaying all these beauties to the greatest possible advantage.

The principal distinguishing characters of the peacocks as a genus, consist in the peculiar crest upon their heads, and the excessive elongation of their tail-coverts and tail-feathers, which are capable of being elevated and expanded, and in this position form one of the most beautiful objects in the creation. The bill is of moderate size, slightly curved, with open nostrils placed near its base; the head is almost wholly feathered; the legs are armed with strong conical spurs; the hind toe touches the ground only with its claw; and the wings are short and concave, the sixth quill-feather being the longest of the series. In the species now under consideration, the prevailing teints are blue and green, varying in intensity, and mutually changing into each other according as the light falls more or less directly upon them. In size and proportions the two birds are nearly similar, but the crest of the present species is twice as long as that of the other, and the feathers of which it is composed are regularly barbed from the base upwards in the adult bird, and of equal breadth throughout. The head and crest are interchangeably blue and green. A naked space on the cheeks including the eyes and ears is coloured of a light yellow behind, and bluish-green towards its forepart. The feathers of the neck and breast, which are broad, short, rounded, and imbricated like the scales of a fish, are at their base of the same brilliant hue as the head, and have a broad, lighter, somewhat metallick margin; those of the back have still more of the metallick lustre. The wing-coverts are of the general hue, with a deeper tinge of blue; the primary quill-feathers are light chestnut. The tail-feathers and their coverts are of a splendid metallick brown, changing into green; their barbs are extremely long, loose, silky, and somewhat decomposed; and the latter are almost all terminated by similar ocellated spots to those which mark the tail of the common species, and of nearly the same size. As in it they are of a beautiful deep purple in the centre, which is about the size of a shilling; this is surrounded by a band of green becoming narrow behind, but widening in front, and filling up a kind of notch that occurs in the blue; then comes a broad brownish band; and lastly, a narrow black ring, edged with chestnut, all beautifully metallick, or rather presenting the hues of various precious stones, when viewed in certain lights. The bill, which is of a grayish horn-colour, is rather longer and slenderer than in the common species; the iris is deep-hazel; the legs are strong, naked, reticulated, and of a dusky-black; and the spurs, which are quite large, are of the same hue.

Their food consists of much the same substances as that of the common dunghill fowl. They are very mischievous in gardens, nestling in the soft beds, and creating great havock among the young cabbages. The female lays four or five eggs, and hides her nest from the male, because, it is said, he has a propensity to destroy the eggs, and even the young.

THE WHITE SPOONBILL.

Platalea Leucorodia. Linn.

There is perhaps no organ the modifications of which are so infinitely varied or have such influence on the physiognomical expression of birds as the bill. In the shape of this distinguishing feature, nature appears to have exhausted every possible kind of variation, and sometimes even to have amused herself, if the expression may be allowed, with uniting in the same natural family forms the most

THE WHITE SPOONBILL.

dissimilar. Thus it may appear startling to some of our readers, but it is nevertheless an indisputable fact, that there is the closest affinity between the spoonbills and the storks, notwithstanding the great discrepance which at first sight seems to exist between the conical tapering and pointed bill of the latter, and the broad, flat, and expanded figure of the same organ in the former, from which they derive their not very well-chosen appellation. So slight, indeed, is the difference between them in other essential points, that were we to set aside the form of the bill and the greater-development of the web which unites the anterior toes of the spoonbills, we should look in vain for any other characters of sufficient importance to establish a generick distinction between them.

The beak of the spoonbills is proportionally somewhat longer even than that of the storks; it is perfectly straight, flattened both above and below, broad, flexible, and covered at its base with a membranous cere. Towards the extremity, it expands into an oval disk, of greater breadth than the remainder of the bill, and rounded at the point. The nostrils form two narrow oval fissures within the cere at the base of the upper mandible, which is slightly grooved on either side by a longitudinal furrow, and terminates in a trifling hook. On the inside, the mandibles are channelled, the margins of the channel being raised, and surmounted by a row of sharp projecting denticulations. In the adult bird, the cheeks are naked, and a tuft of long narrow feathers forms a crest on the back of the head. The tongue is exceedingly short, triangular, and pointed; the throat capable of being dilated into a pouch; the legs long and covered with large reticulated scales; the toes four in number, the three anterior united for a considerable distance by a web which is continued, in the shape of a fringe, to their very extremities, and the posterior resting upon the ground for nearly its whole length; the claws short, narrow, slightly curved, and pointed; and the second quill-feather the longest.

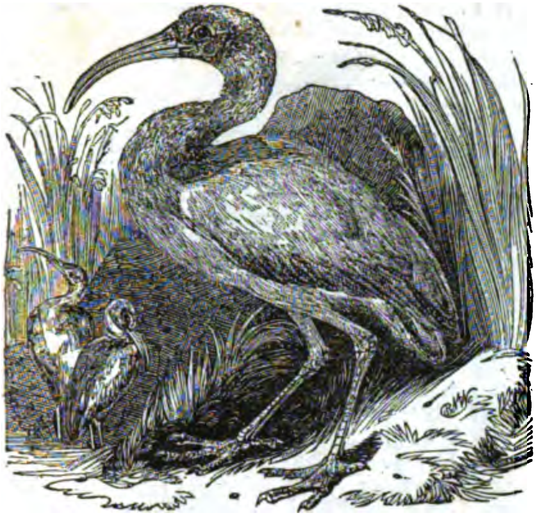
The white spoonbill is the only certain species of the group that inhabits the old Continent. In common with all the nearly-related birds, it is migratory in its habits, quitting the north of Europe, and more particularly Holland, which is its favourite summer resort, about November, and returning about April. In the winter it takes up its quarters in various parts of Africa, extending southward even to the Cape of Good Hope. It is rarely met with in inland countries except on the banks of the larger rivers; but is by no means uncommon during the season on the coasts of the great extent of country which it embraces in its visits. In England, it is now but an occasional visiter. Its size is less than that of the wild goose, its entire length from the extremity of the beak to the tip of the tail not exceeding two feet, six or eight inches. Of this, the bill alone measures six or seven inches, and its breadth, at the widest part, is not less than an inch and a half. The expanse of its wings is about four feet. The entire plumage is of a clear white, with the exception of a tawny yellowish spot on the breast of the adult, extending upwards on either side in the form of a narrow stripe, the two branches uniting on the back. The long narrow feathers which form the crest on the top of the head fall gracefully backwards. A pale yellow tinge distinguishes the circumference of the eyes and the throat, and is again visible at the extremity of the bill, the remainder of which is of a dull-black, with a bluish shade in the lateral grooves. The colour of the legs and feet is perfectly black; and the irides are of a bright orange red. The females are smaller than the males, but differ in no other external character. In the young, the quills of the wing-feathers are black, the parts which are without feathers are of a dirty white, and the crest and spot on the breast are entirely wanting.

The spoonbills usually frequent wooded marshes near the mouths of rivers, building in preference upon the taller trees, but, where these are wanting, taking up their abode among the bushes or even among the reeds. The females usually lay three or four whitish eggs. They associate together, but not in any considerable numbers, and feed upon the smaller fishes and their spawn, shell-fish, and other aquatick or amphibious animals. The form and flexibility of their bills are well adapted for burrowing in the mud after their prey; and the tubercles which are placed on the inside of their manibles serve both to retain the more slippery animals and to break down their shelly coverings. Their internal conformation, which is in nearly every respect similar to that of the storks, is admirably suited to this kind of food. They have no proper voice, the lower larynx being destitute of the muscles by which sounds are produced, and their only means of vocal expression consist in the snapping of their mandibles, which they clatter with much precipitation when under the influence of anger or alarm. In captivity, they are perfectly tame, living in peace and concord with the other inhabitants of the farmyard, and rarely exhibiting any symptoms of wildness or desire of change. In common with the neighbouring groups they feed on all kinds of garbage.

THE SCARLET IBIS.

Ibis rubra. Lacep.

That a bird so highly celebrated in mythological history as the ibis of ancient Egypt, incessantly represented on the early monuments of the country which it still inhabits, and transmitted to us in al most infinite numbers in the shape of mummies from a remote antiquity, should have been widely mistaken by every modern writer, until within the last



THE SCARLET IBIS.

fifty years, is indeed matter of astonishment; but such is really the fact. Belon, an excellent ornithologist, who visited Egypt about the middle of the sixteenth century, imagined that the stork was the true ibis of the ancients. Pocock maintained that the latter was a species of crane: and De Maillet conjectured that under the name of ibis were generically comprehended all those birds which are instrumental in removing the noxious reptiles that swarm in the inundated lands. Perrault first introduced the erroneous notion that the ibis of antiquity was a species of tantalus, in which he was followed implicitly by naturalists throughout the whole of the last century. Brisson, Buffon, Linnæus, and Latham, all united to give it currency; and the tantalus ibis of the two latter authors was universally regarded as the sacred bird.

The adventurous Bruce was the first to throw a doubt upon the authenticity of this determination, and to point out the identity between the figures represented on the ancient monuments, the mummies preserved in the Egyptian tombs, and a living bird common on the banks of the Nile and known to the Arabs by the name of abou hannes. But it was not until after the return of the French expedition from Egypt, that the question was finally settled by a careful anatomical comparison of the ancient mummies and recent specimens then brought home by Geoffroy-Saint-Hilaire and Savigny. From the examination of these materials M. Cuvier was enabled to verify Bruce's assertion, and to restore to science a bird which, after having formed for centuries the object of a nation's adoration, had fallen into oblivion, and was wholly unknown to modern naturalists. At the same time he pointed out those distinctive characters on which M. Lacepede founded the genus ibis, formerly established by M. Cuvier himself in the first edition of his Regne Animal.

Although the bird which we have now to describe is a native of the new world it has not been considered by ornithologists as requiring to be generically distinguished from the ibis of the ancients. With that and with other species, distributed equally over the old continent and in America, it forms part of a group among the ardeiæ, characterized by a long and slender bill, nearly square at its base, where it is of less breadth than the head, almost straight for about one half of its length, and having the remaining part gradually curved downwards, blunt at its point and without any notch; nostrils situated near the base of the bill at the commencement of a groove which is continued along each side of its upper surface as far as to its point; the head, and sometimes the neck, devoid of feathers to an extent, varying in the different races; and toes webbed at the base, the hinder one placed somewhat above the level of the others, but being of sufficient length to rest upon the earth. In many of these characters we observe a considerable deviation from those of the storks and other typical examples of the family with which the ibis is associated, and a marked approach to the curlews, occupying a station on the confines of the neighbouring family of Scolopaciadæ.

The scarlet ibis, in its adult plumage, is one of the most splendid among birds. When fully grown it measures from twenty to twenty-four inches in height. The colour of its plumage is, as its name imports, entirely scarlet, with the exception of the quill-feathers of its wings, which are black. The naked part of its cheeks, its bill, legs, and feet, are of a pale reddish-brown. Its legs are covered with large scales. When first hatched, the young are covered with a blackish down, which soon changes to an ash-colour, and at length becomes nearly white. This change occurs about the period they begin to fly; after the second moulting they assume a tinge of red, which gradually becomes deeper and more distinct, appearing first on the back, and then spreading over the sides and upper parts of the body. Its brilliancy increases as the bird advances in age.

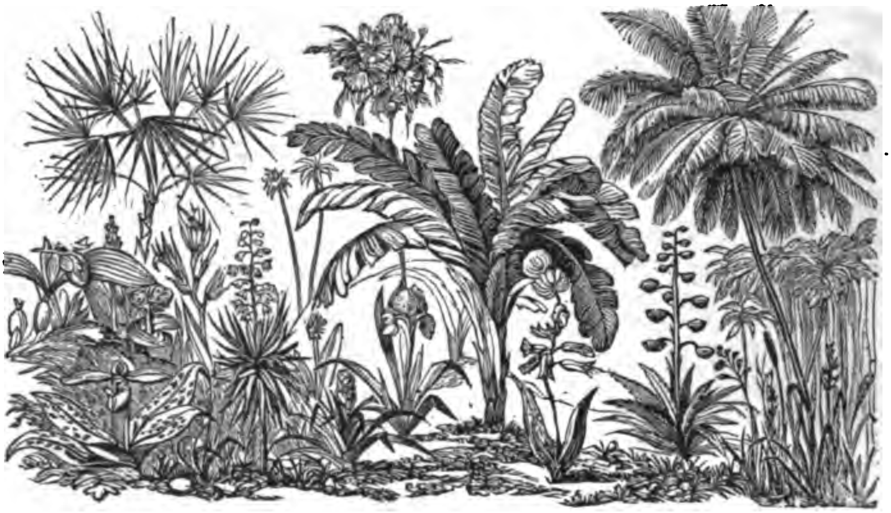
This beautiful species is a native of the tropical regions of America, and frequents the seashores and mouths of the larger rivers in large bands, feeding upon insects, shell-fish, and the smaller fish. It generally lies concealed during the heat of the day and in the night; and seeks its food only in the morning and evening. Its nest is built among the thickets, and is of the most simple construction.—When taken young, it is easily tamed, and submits to domestication without repining. According to De Laet it has been propagated in captivity; and M. Delaborde gives the history of an individual which he kept for upwards of two years, feeding it on bread, raw or cooked meat, and fish. It was fond of hunting in the ground for earth-worms, and followed in quest of this food the labours of the gardener. It would roost at night upon the highest perch of the poultry-house, and fly abroad early in the morning, sometimes to a great distance from home.

Our climate is probably too changeable and too cold for so delicate a bird; otherwise it would form a splendid, and it is said a savoury, addition to our stock of domesticated fowls. They are frequent on the coast of Florida.

As that gallant can best effect a pretended passion for one woman, who has no true love for another, so he that has no real esteem for any of the virtues, can best assume the appearance of them all.

If you would be known, and not know, *vegetate* in a village; if you would know, and not be known, *live* in a city.

BOTANY.



PLANTS PRODUCED FROM SEEDS HAVING ONLY ONE SEED-LEAF.

(*Monocotyledons.*)

In the annexed plate are represented a few of the types or principal forms of monocotyledonous vegetation; the righthand tree is the cocoa-nut tree, one of a very numerous tribe, the palms, which are considered by botanists as peculiarly representing the class; on the lefthand side is the singular palm called chamærops, the only one of the order which ever grows wild in Europe; the whole tribe being confined to tropical countries, where they form the most majestick trees, from their height and their beautiful foliage.

In the centre of the plate is the banana, (Musa paradisiaca,) a plant which furnishes food to the greater part of mankind in the tropicks, as the grasses do in the temperate and northern regions; in the distance is seen the aloe, a large tribe of plants, some of which are remarkable for flowering at very distant periods, when cultivated in colder climates; and in the lefthand corner may be distinguished two species of the orchis tribe, notable for its singular flowers.

On the righthand, under the cocoa, are some representatives of the grasses, to us inhabitants of the north, the most important tribe of all plants affording food for man; in the foreground are seen, in succession from the orchis, a Yucca aloifolia, or aloe-leafed, Tillandsia anceps of the pineapple tribe, an Iris, a Lachenalia; and beyond the banana is the fan-palm.

Cotyledons are the seminal leaves or the thick fleshy lobes of seeds: they are very manifest in beans, whose cotyledons grow out of the ground in the form of two large succulent leaves. In some plants they come up above-ground as the seed sprouts or germinates, as the bean, lupin, Convolvulus, marvel of Peru, &c.; in others, as the horse-chestnut, and all grasses, they do not appear, but remain in the earth enclosed in the integuments.

The most essential difference in the structure, mode of growth, and character of the plants growing from the seeds, is found connected with the number or position of these small organs, the cotyledons.

Many plants, as Indian corn, wheat, the grasses, &c., have but one cotyledon; mosses, &c., have none.

Those plants, the seeds of which have either only one cotyledon, or if more, these *alternate* on the embryo, are called *monocotyledonous; Ex.:* grasses, duckweed, lilies, orchises, aloes, bananas, iris, and all palms, &c., &c. Plants of this class are easily recognised by the veins of their leaves being parallel or not reticulated, that is, their veins do not cross each like network.

GENERAL RULES FOR AVOIDING POISONS.

Plants not Poisonous.

1. Plants with a *glume* calyx, never poisonous. As wheat, Indian corn, foxtail-grass, sedge-grass, oats.—*Linnæus.*

2. Plants whose stamens *stand on the calyx*, never poisonous. As currant, apple, peach, strawberry, thorn.—*Smith.*

3. Plants with *cruciform* flowers, rarely if ever poisonous. As mustard, cabbage, water-cress, turnip.—*Ib.*

4. Plants with *papilionaceous* flowers, rarely if ever poisonous. As pea, bean, locust-tree, wild indigo, clover.—*Ib.*

5. Plants with *labiate* corols, bearing seeds without pericarps, (seed-cases or pods,) never poisonous. As catmint, hyssop, mint, motherwort, majoram.—*Ib.*

6. Plants with *compound* flowers, rarely poisonous. As sunflower, dandelion, lettuce, burdock.—*Milue.*

Poisonous Plants.

1. Plants with five stamens and one pistil, with a dull-coloured *lurid* corol, and of a nauseous sickly smell, always poisonous. As tobacco, thorn-apple,

henbane, nightshade. The degree of poison is diminished where the flower is brighter coloured and the smell is less nauseous. As potato is less poisonous, though of the same genus with nightshade.—*Smith.*

2. *Umbelliferous plants* of the aquatick kind, and of a nauseous scent, are always poisonous. As water-hemlock, cow-parsley. But if the smell be pleasant, and they grow in dry land, they are not poisonous. As fennel, dill, coriander, sweet-cicely.—*Ib.*

3. Plants with *labiate* corols and seeds in capsules, frequently poisonous. As snapdragon, foxglove.—*Ib.*

4. Plants from which issues a *milky juice* on being broken, are poisonous, unless they bear compound flowers. As milkweed, dogbane, Milne's Contortae, and Lactescertia.

5. Plants having any *appendage* to the calyx or corol, and twelve or more stamens, generally poisonous. As columbine, crow-foot.—*Linnæus.*

MOST GENERAL RULE.

Plants with few stamens, not frequently poisonous, except the number be five; but if the number be twelve or more, and the smell nauseous, heavy, and sickly, the plants are generally poisonous.—*Milne's Multisiliquae, and Sapor.*

GENERAL OBSERVATIONS ON VEGETATION.

An analogy between vegetable and animal irritability has been proved, by the facts of mineral and vegetable poisons producing analogous effects on both the divisions of organick bodies; but this subject we cannot enter into now.

In the description of the leaves, instances were mentioned of voluntary motion, proving the existence of vitality and irritability; but more examples may be given, which are interesting as proofs of the care apparent in all the works of nature, for the preservation of the individual, and for the continuance of the species.

In many plants, the leaves close together over the flowers at night, as if to shelter these important organs from the cold; while the flowers of many shut up their corollas in cloudy weather, and expand them only in sunshine. The evening-primrose, and some *Cacti* unfold their blossoms at the approach of evening, which wither at the return of day.

But still more obvious signs of irritability are shown in the organs of reproduction; if the stamens of the common berberry are touched with a needle, or any sharp body, they spring up against the pistil, and an equal degree of irritability is shown by those of the common wall pellitory.

The fruits of many plants burst open with considerable force, for the sake of dispersing the seeds they enclose as far as possible, and thus affording more room for their growth; and, therefore, obviating that waste of seeds which takes place when they simply drop on the ground, and lie too close together to admit of their all thriving.

This phenomenon is particularly striking in the spirting-cucumber (Momordica elaterium), which, when ripe, expels its stalk, seeds, and juice, with considerable force; in the Touch-me-not (Impatiens noil-me-tangere), the same thing is observable of the seeds; and many similar facts might be mentioned of other plants.

The only obstacles to vegetation are, extremes of either cold or heat, and absolute privation of air and light; consequently, plants of some sort are found on every portion of the earth's surface, as well as at the bottom of ponds, lakes, rivers, and the ocean, to a considerable depth.

But the various species, though endued with the power of accommodating their exteriour form, within certain limits, to the peculiar qualities of the situation in which they grow, have each their own proper *station*, as it is called, where alone they are capable of flourishing, and perpetuating their races for ages; and, if transported into a very different one, they soon languish and die.

Thus some species always grow, or only thrive, on lofty mountains; others in plains; some seek the shade of woods; others live only in marshes. Some grow always under water, and even stagnant water, running streams, rivers, &c., have their peculiar tribes; still more distinct are those of salt, from the inhabitants of fresh water.

A considerable degree of warmth and moisture is most favourable to vegetation; hence it is, that in tropical regions the most magnificent plants are generally to be found.

Those who have resided all their lives in countries like our own, where man has, as it were, forced all nature to minister to his wants and pleasures, and where those plants are alone cultivated or permitted which are of use to him, can form no idea of the luxuriance and splendour of the vegetation of the torrid zone.

The traveller is never weary of admiring the mass of plants, crowded and mingled together, so varied and so extraordinary in their forms and productions. Enormous forest-trees, which indicate an age of many centuries, and yet present no signs of decay; lofty palms, contrasting, by their elegant and simple foliage, with all that surround them; climbing plants, which extend their endless stems from tree to tree, now hanging in graceful festoons, loaded with large and brilliant flowers, now trailing on the ground, and forming an impassable barrier, in turn solicit his attention. It is in vain that man endeavours to force a passage through these woods; hatches are powerless against the hard stems of the giant trees; and if fire be resorted to, the flame is immediately stifled in the thick, rank air of the impenetrable mass.

The earth, rendered fertile by the decay of vegetable matter, constantly affords nutriment to new individuals, which spring up to dispute the limited space with their parent plants; while animals, birds, and reptiles, as extraordinary and various as the plants, swarm in the recesses of the forest, safe from the pursuit and molestation of mankind.

In proportion as we recede from the equator towards the poles, as the temperature of the air becomes lower, and therefore the atmosphere drier, vegetation diminishes in richness and variety.

In those countries where winter prevails for the greater part of the year, or on the summits of lofty mountains, near the regions of perpetual frost, a small stunted race of plants is found, which are hardly able to flower and ripen their fruits in the short summer they enjoy; and even these at last yield to the increasing severity of the cold, and the vegetable kingdom is represented, at this extremity of the scale, by minute mosses and lichens, colouring the surface of the naked rocks, whence they are seen among the vast fields of dazzling snow.

But wherever we go, wherever we turn our eyes, whether in the savannahs and forests of South America, or in the barren plains of Tartary; whether we contemplate the enormous baobob and spreading banyam, or examine the smallest fungus that grows on a rotten pale, plants, not less than organized beings of a higher order, are objects of admiration, and sources of instruction and pleasure to the thinking mind.

But after all we have written and illustrated upon the subject of botany, after all our convictions of its usefulness and interest as a science, we should remind the learner, in conclusion, that in this study little *real* knowledge can be acquired from books alone. Natural history is essentially a science of observation; elementary works on that subject can scarcely do more than direct a beginner in the best method of observing usefully and accurately; and this remark, perhaps, is more applicable to botany than to many other branches of the science. Without a careful comparison of each part of a plant described in a book, with a *living specimen*, however clear that description may be, it will be impossible for the pupil to comprehend it distinctly; and this delightful portion of natural history, if its acquisition be attempted within doors, only, will become dry and uninstructive, instead of being as it is, when rightly pursued, under the guidance of nature herself, a source of inexhaustible wonder, and ever-new pleasure.

The proper season for pursuing this study has arrived. Blooming May is stepping forth to deck the long ice-bound fields, in gorgeous and beautiful liveries. The wild flowers, the best for examination, are sending out their perfumes in the woods, and the domestick plants are bursting forth in the gardens and dooryards. Spring owes its charms to the flowers, and now is the time to avail one's self of the pleasures which their study affords. Nature is an economical and accessible instructer. and every walk taken in the fields for recreation, may be made a lesson in botany to one who desires to learn.

"No one can be a botanist without collecting plants, and making up an herbarium with his own hands." A good plain magnifying glass will be necessary for examining the minute parts of flowers; but a very considerable degree of proficiency may be made, before the learner requires any other instruments than a common penknife and a needle.

Posthumous charities are the very essence of selfishness, when bequeathed by those, who, when alive, would part with nothing. In Catholick countries there is no mortmain act; and those who, when dying, empoverish their relations by leaving their fortunes to be expended in masses for themselves, have been shrewdly said to leave their own souls their heirs.

A friend is never known till needed.
A great fortune is a great slavery.
Affectation is at best a deformity.

THE BRIDGES OF CHINA.

A great number of canals traversing the cities and the country of China in all directions, render necessary a number of bridges, and these bridges are indeed as numerous as might be expected from an ingenious people exceedingly provident for their own convenience and comfort. From the amazing facilities afforded by the canals for transporting weighty burdens by water, these bridges do not require to be built of great strength, as every object of produce or manufacture can be wafted over on rafts or in barges. In general, indeed, only foot-passengers use the bridges, which are, for the most part, of a light but fanciful and elegant construction. They are found of three, five, or seven arches; the centre arch being frequently from thirty to forty-five feet wide, and sufficiently high to let vessels pass without striking their masts. Some of them stride across the canal with one bold, lofty arch. The elevation of these bridges renders steps necessary. They resemble, in this respect, the old bridges of Venice, on which you ascend by steps on one side, and descend on the other in the same way. The engraving represents one of these bridges, and the reader will readily conceive the beautiful effect produced by a number of these light structures, succeeding each other at short distances, for miles and miles, where the canal runs in a straight line. Some of these bridges are of extraordinary beauty, and even magnificent. There is one near Pekin, built entirely of white marble, elaborately ornamented. Others are found over the canals of still greater magnificence, and with a grand triumphal arch at each end. And others again, instead of being composed of salient arches, are flat from one side of the canal to the other, stones, or marble flags of great length, being laid on piers so narrow and airy, that the bridge looks as if it were suspended in the air. It is a somewhat curious fact that the Chinese censors have considered these numerous bridges as luxuries, and have more than once reproached the emperours for erecting them. A bridge, constructed in the eighth century, of iron and bronze, was one of the subjects of their reprehension, which fell very severely on an emperour of the dynasty of Souy, who built forty bridges, all in different styles of architecture, in the single city of Soe-Tcheou.

But these canal bridges are immeasurably surpassed in magnitude, and occasionally in beauty, by the bridges thrown across rivers, or long swamps, and places exposed to inundations. Some of the latter are of prodigious extent, and have triumphal arches on them, built of wood, in the pagoda style, and splendidly painted.

The Chinese have, besides, numberless bridges of boats, and many suspension bridges. They are likewise constructed to level roads, and are thrown from mountain to mountain, over deep ravines.—The numbers and variety of bridges are most prodigious.

At Kin-sai, "the celestial city," the ancient capital of Southern China, Marco Polo was told there were twelve thousand; and though, as Mr. Marsden remarks, the truth must be here outstepped, "yet when we consider that according to the description given of the city, the communication between all its parts was chiefly carried on by water; that through at least every principal street there ran a canal, and that in order to facilitate the intercourse of those who dwelt on opposite sides of the same street, it was necessary to have numerous means of crossing; we shall be disposed to allow that the total number of every thing coming under the denomination of a bridge, especially, if those of the suburbs are included, must have been prodigious." The arches of some of the principal of these bridges, not only here, but in other parts of China, are so high as to admit of vessels passing under them without striking their masts. This is mentioned by Marco Polo, and has since been confirmed by many.—"They have built an infinite number of bridges," says P. Le Compt; "these are of three, five, or seven arches; the middle arch is of an extraordinary height, in order that the barks in passing be not obliged to lower their masts." "From all the suburbs," says Du Halde, in his description of a city in the neighbourhood of Kin-sai, "one may approach, and enter, and go every where about the town in a boat. There is no street without a canal, and this is why there are so many bridges, which are very lofty, and almost all of one arch." And we may conclude with the observation of Mr. Barrow:—"Over the main trunk and most of the other canals and rivers, are a great variety of bridges. * * * Some have the piers of such an extraordinary height, that the largest vessels of two hundred tuns sail under them without striking their masts."

CHYMISTRY.

Of Fermentation.

Nearly all vegetable substances are composed of oxygen, hydrogen, and carbon. Owing to the energetick affinities of these elements, vegetable substances are very liable to spontaneous decomposition. So long, indeed, as they remain in connexion with the living plant by which they were produced, the tendency of their elements to form new combinations is controlled; but as soon as the vital principle is extinct, of whose agency no satisfactory explanation can at present be afforded, they become subject to the unrestrained influence of chymical affinity. To the spontaneous changes which they then experience from the operation of this power, the term *fermentation* is applied. This change sometimes terminates in the formation of sugar, at another time in that of alcohol, at a third in that of acetick acid, and at a fourth in the total dissolution of the substance. This has led to the division of the fermentative processes into four distinct kinds; namely, the *saccharine*, the *vinous*, the *acetous*, and the *putrefactive* fermentation. The only substance known to be subject to the *saccharine* fermentation is starch or amidine, a substance which exists abundantly in the vegetable kingdom. When starch is kept in a moist place for a considerable length of time, a change gradually ensues, and a quantity of sugar, equal to about half the weight of the starch employed, is generated. The germination of seeds, as exemplified in the malting of barley, and the ripening of fruit, are also regarded as examples of the saccharine fermentation. It is well known that some fruits, if gathered before their maturity, become sweeter by keeping.

The conditions which are required for establishing the *vinous fermentation* are four in number; namely, the presence of sugar, water, yeast, or some ferment, and a certain temperature. The best mode of studying this process, so as to observe the phenomena, and determine the nature of the change, is to place five parts of sugar, with about twenty of water, in a glass flask furnished with a bent tube, the extremity of which opens under an inverted jar full of water or mercury; and, after adding a little yest, to expose the mixture to a temperature of about 60° or 70° Fahr. In a short time bubbles of gas begin to collect in the vicinity of the yest, and the liquid is soon put into brisk motion, in consequence of the formation and disengagement of a large quantity of gaseous matter; the solution becomes turbid, its temperature rises, and froth collects upon its surface. After continuing for a few days, the evolution of gas begins to abate, and at length ceases altogether; the impurities gradually subside, and leave the liquor clear and transparent.

The only appreciable changes which are found to have occurred during the process, are the disappearance of the sugar and the formation of alcohol, which remains in the flask, and of carbonick acid gas, which is collected in the pneumatic apparatus. A small portion of yest is, indeed, decomposed; but the quantity is so minute, that it may without inconvenience be left out of consideration. The yest, indeed, appears to operate only in exciting the fermentation, without further contributing to the products. The atmospherick air, it is obvious, has no share in the phenomena, since it may be altogether excluded without affecting the result. The theory of the process is founded on the fact that the sugar, which disappears, is almost precisely equal to the united weights of the alcohol and carbonick acid; and hence the former is supposed to be resolved into the two latter.

Though a solution of pure sugar is not susceptible of the vinous fermentation without being mixed with yest, or some such ferment, yet the saccharine juices of plants do not require the addition of that substance; or, in other words, they contain some principle which, like yest, excites the fermentative process. Thus must, or the juice of the grape, ferments spontaneously; but Gay Lussac has observed that these juices cannot begin to ferment unless they are exposed to the air. By heating must to 212° Fahr., and then corking it carefully, the juice may be preserved without change; but if it be exposed to the air for a few seconds only, it absorbs oxygen, and fermentation takes place. From this it would appear that the must contains a principle which is convertible into yest, or at least acquires the characteristick property of that substance by absorbing oxygen.

The various kinds of stimulating fluids, prepared by means of the vinous fermentation, are divisible into wines which are formed from the juices of saccharine fruits, and the various kinds of ale and beer produced from a decoction of the nutritive grains previously malted.

The juice of the grape is superiour, for the purpose of making wine, to that of all other fruits, not merely in containing a larger proportion of saccharine matter, since this deficiency may be supplied artificially, but in the nature of its acid. The chief or only acidulous principle of the mature grape, ripened in a warm climate, such as Spain, Portugal, or Madeira, is the bitartrate of potassa. As this salt is insoluble in alcohol, the greater part of it is deposited during the vinous fermentation; and an additional quantity subsides, constituting the *crust*, during the progress of wine towards its point of highest perfection. The juices of other fruits, on the contrary, such as the gooseberry or currant, contain the malick and citrick acids, which are soluble both in water and alcohol, and of which, therefore, they can never be deprived. Consequently, these wines are only rendered palatable by the presence of free sugar, which conceals the taste of the acid; and hence it is necessary to arrest the progress of the fermentation long before the whole of the saccharine matter is consumed. For the same reason, these wines do not admit of being long kept; for as soon as the free sugar is converted into alcohol by the slow fermentative process, which may be retarded by the addition of brandy, but cannot be prevented, the wine acquires a strong sour taste.

Ale and beer differ from wines in containing a large quantitity of mucilaginous and extractive matters derived from the malt with which they are made. From the presence of these substances they always contain a free acid, and are greatly disposed to pass into the acetous fermentation. The sour taste is concealed partly by free sugar, and partly by the bitter flavour of the hop, the presence of which diminishes the tendency to the formation of an acid.

When any liquid which has undergone the vinous fermentation, or even pure alcohol diluted with water, is mixed with yest, and exposed in a warm place to the open air, an intestine movement speedily commences, heat is developed, the fluid becomes turbid from the deposition of a peculiar filamentous matter, oxygen is absorbed from the atmosphere, and carbonick acid is disengaged. These changes, after continuing a certain time, cease spontaneously; the liquor becomes clear, and instead of alcohol, it is now found to contain acetick acid. This process is called the *acetous fermentation.*

The vinous may easily be made to terminate in the acetous fermentation; nay, the transition takes place so easily, that in many instances, in which it is important to prevent it, this is with difficulty effected. It is the uniform result, if the fermenting liquid be exposed to a warm temperature and to the open air; and the means by which it is avoided is by excluding the atmosphere, or by exposure to cold.

For the acetous fermentation a certain degree of warmth is indispensable. It takes place tardily below 60° Fahr.; at fifty degrees it is very sluggish; and at 32°, or not quite so low, it is wholly arrested. It proceeds with vigour, on the contrary, when the thermometer ranges between 60° and 80°, and is even prompted by a temperature somewhat higher. The presence of water is likewise essential; and a proportion of yest, or some analogous substance, by which the process may be established, must also be present.

The acetous fermentation is conducted on a large scale for yielding the common vinegar of commerce. In France, it is prepared by exposing weak wines to the air during warm weather; and in this country it is made from a solution of brown sugar or molasses, or an infusion of malt. The vinegar thus obtained always contains a large quantity of mucilaginous and other vegetable matters, the presence of which renders it liable to several ulterior changes.

The conditions which are required for enabling the *putrefactive process* to take place, are moisture, air, and a certain temperature.

The presence of a certain degree of moisture is absolutely necessary; and hence vegetable substances, which are disposed to putrefy under favourable circumstances, may be preserved for an indefinite period if carefully dried, and protected from humidity. Water acts apparently by softening the texture, and thus counteracting the agency of cohesion; and a part of the effect may also be owing to its affinity for some of the products of the putrefaction. It is nót likely that this liquid is actually decomposed, since water appears to be a uniform product.

The air cannot be regarded as absolutely necessary, since putrefaction is found to be produced by the concurrence of the two other conditions only: but the process is without doubt materially promoted by free exposure to the atmosphere. Its operation is, of course, attributable to the oxygen combining with the carbon and hydrogen of the decaying substance.

The temperature most favourable to the putrefactive process is between 60° and 100° Fahr. A strong heat is unfavourable, by expelling moisture; and a cold of 32° Fahr., at which water congeals, arrests its progress altogether. The mode in which calorick acts is the same as in all similar cases, namely, by tending to separate elements from one another which are already combined.

The products of the putrefactive fermentation may be divided into the solid, liquid, and gaseous. The liquid are chiefly water, together with a little acetick acid, and probably oil. The gaseous products are light carburetted hydrogen, carbonick acid, and, when nitrogen is present, ammonia. Pure hydrogen, and probably nitrogen, are sometimes disengaged. Thus hydrogen and carbonick acid, according to Proust, are evolved from putrefying *gluten*; and Saussure obtained the same gases from the putrefaction of wood in close vessels. Under ordinary circumstances however, the chief gaseous product of decaying plants is light carburetted hydrogen, which is generated in great quantity at the bottom of stagnant pools during summer and autumn. Another elastick principle, supposed to arise from putrefying vegetable remains, is the noxious miasm of marshes. The origin of these miasms, however, is exceedingly obscure. Every attempt to obtain them in an insulated state has hitherto proved abortive; and, therefore, if they are really a distinct species of matter, they must be regarded, like the effluvia of contagious fevers, as of too subtile a nature for being subjected to chymical analysis.

When the decay of leaves or other parts of plants has proceeded so far that all trace of organization is effaced, a dark pulverulent substance remains, consisting of charcoal combined with a little oxygen and hydrogen. This compound is vegetable mould, which, when mixed with a proper quantity of earth, constitutes the soil necessary to the growth of plants. Saussure, in his excellent *Recherches Chimiques sur la Vegetation*, has described vegetable mould as a substance of uniform composition; and on heating it to redness in close vessels, he procured carburetted hydrogen and carbonick acid gases, water holding the acetate or carbonate of ammonia in solution, a minute quantity of empyreumatick oil, and a large residue of charcoal mixed with saline and earthy ingredients. On exposing vegetable mould to the action of light, air, and moisture, a chymical change ensues, the effect of which is to render a portion of it soluble in water, and thus applicable to the nutrition and growth of plants.

FLATHEAD INDIANS.

A custom prevalent, and almost universal, among several tribes of Indians west of the Rocky Mountains, is that of flattening, or mashing in the whole front of the scull, from the superciliary ridge to the crown. The appearance imparted to them by this most unnatural and horrible contortion is almost hideous, and one would suppose that the intellect would be materially injured by it; this, however, does not appear to be the case, as I have never seen (with one single exception, the Kious,) a race of people who appear more shrewd and observant.

I had a conversation a few days since with an intelligent chief, who speaks English tolerably, on the subject. He stated that he had exerted himself to abolish that practice in his own tribe, but although his people would listen patiently to his "talk" on most subjects, their ears were firmly closed when this was mentioned; "they would leave the council-fire one by one, until none but a few squaws and children were left to drink in the words of the chief." It is even considered among them a degradation to possess a round head, and one whose "caput" has happened to be neglected in his infancy can never become even a subordinate chief in his tribe, and is treated with indifference and disdain, as one unworthy a place amongst them.

I saw, to-day, a young child from whose head the board had just been removed. It was, without exception the most frightful and disgusting object that I ever beheld. The whole front of the head was completely flattened, and the mass of brain being forced back, caused an enormous projection there.—The poor little creature's eyes protruded to the distance of half an inch, and looked inflamed and discoloured, as did all the surrounding parts. Although I felt a kind of chill creep over me, from the contemplation of such dire deformity, yet there was something so stark-staring, and absolutely queer, in the physiognomy, that I could not repress a smile, and when the mother amused the little object and made it laugh, it loooked so irresistibly, so terribly ludicrous, that I, and those who were with me, burst into a simultaneous roar, that frightened it, and made it cry, in which predicament it looked much less horrible than I had before seen. Some of these Indians would be handsome were it not for the abominable practice which, as I have said, is almost universal among them, of destroying the form of the head. The features of many are regularly handsome, though generally devoid of expression, and the form tolerably good. The only clothing worn by them is a robe, of deer or elk skin, and sometimes of the peltries of muskrat or beaver sewn together, but their persons are seldom more than half covered.

To be continually subject to the breath of slander, will tarnish the purest virtue, as a constant exposure to the atmosphere will obscure the brightness of the finest gold; but in either case, the real value of both continues the same, although the *currency* may be somewhat impeded.

THE FAMILY MEETING

BY CHARLES SPRAGUE.

[The following lines were written on occasion of the accidental meeting, a few evenings since, of all the surviving members of a family, the father and mother of which (one eighty-two, the other eighty years old) have lived in the same house *fifty-three* years.]—*Boston Courier.*

We are all here!
Father, Mother,
Sister, Brother,
All who hold each other dear,
Each chair is filled, we're all *at home*,
To-night let no cold stranger come;
It is not often thus around
Our old familiar hearth we're found.
Bless then the meeting and the spot,
For once be every care forgot;
Let gentle peace assert her power,
And kind affection rule the hour;
We're all, all here,

We're *not* all here!
Some are away—the dead ones dear,
Who thronged with us this ancient hearth;
And gave the hour to guiltless mirth,
Fate, with a stern, relentless hand,
Looked in and thinned our little band:
Some like a night flash passed away,
And some sank; lingering, day by day;
The quiet graveyard--some lie there,
And cruel Ocean has his share—
We're *not* all here.

We *are* all here!
Even they, the dead, though dead, so dear,
Fond memory, to her duty true,
Brings back their faded forms to view.
How life-like through the midst of years;
Each well-remembered face appears;
We see them as in times long past,
From each to each kind looks are cast;
We hear their words, their smile behold,
They're round us as they were of old,
We *are* all here.

We are all here!
Father, Mother;
Sister, Brother,
You that I love with love so dear,
This may not long of us be said,
Soon must we join the gathered dead,
And by the hearth we now sit round,
Some other circle will be found.
O then that wisdom may we know,
That yields a life of peace below;
So in the world to follow this,
May each repeat in words of bliss,
We're all, all *here!*

FEMALE EDUCATION.

LETTER TO A SISTER.

Dear F.:—I take pleasure in attempting to redeem the pledge I gave you, in regard to your reading, studies, and general conduct. I am afraid, however, that I made a rash promise, and that I shall find myself incompetent to a task, which in an extended sense, would more fitly fall into the hands of learning and experience. I hope, therefore, that while in your fondness and reliance, my deficiencies may be overlooked, you may not forget your liability to imbibe my errours. It is proper that you should duly weigh and analyze every new idea, and, indeed, ponder critically every sentence. By this means the writer's risk of committing injury would be materially lessened, and the probability of your own improvement would be greatly enhanced.

You have now attained that age, which would commonly rank you in the senior class of a fashionable boarding-school. It is, perhaps, the most important period in a young lady's life. The course of studies usually allotted in the schools, have mostly been passed over; most of the various little accomplishments have collaterally been acquired, and the long-wished-for time when the pupil becomes the "mistress of polite literature," is now rapidly approaching. She feels, perhaps, an exuberance of joy, when she contemplates the proximity of the period, when all her vexed studies shall be completed, and it shall be said of her, "She has finished her education." She is no longer to be restrained by the rigid rules of a seminary; no longer to to be the obedient subject *in terrorem* of a mistress; no longer to be regulated in her goings-out and comings-in by the sempiternal school-bell; no longer to be haunted by the images of old tutors, the terrours of state lessons, and the perplexities of diagrams. Soon she is to be free; free as air; and as lighthearted as a wild bird just escaped from inglorious thraldom. The fancy-goods shop, the perfumers, and the hair-dressers are beginning to attract her notice, and the nice little cares of the toilet are beginning to supplant matters which were formerly of graver moment. Beauty, grace, dress, a dash in some fashionable promenade, a belle at a party, a *figurante* at a ball, occupy her imagination. Peradventure she begins to task her ingenuity in devising the various plans of captivating a beau, and perhaps fancies herself at the head of a whole troop of admirers and devoted gallants. Albeit, she allows distant and dreamy views of matrimony to pop into her head; wonders who her lover will be, where they shall live, what kind of a house they shall dwell in. She is altogether a light and visionary creature, whose mind, in the unreflecting greenness of girlhood, is beginning to wanton in the superficial splendours of maturer years. It is the commencement of the age of girlish romance, which subsists by the exaggerations of the fancy, and partakes the nature of an unsubstantial but continued dream. Her soul, in its vagaries, is chasing up the phantoms of hope, and forsooth, the flattering promises of the eager pursuit become the faith and fixtures of the mind. But her predicament is therefore the more dangerous; being led by false lights, guided by fictitious calculations, and liable to mistake the shadow for the substance.

And this description, I fear, applies to a majority of those young ladies who are approaching the contemplated end of their studies; I do not suppose it to be applicable to your character. For even if you were destititute of your natural sagacity, I should presume that you had imbibed, from the elder members of your family, who are sensible, prudent and judicious, sufficent practical wisdom to preserve you from a dangerous indulgence in such romantick reveries. But if your friends, in their anxiety about your education, had kept you in close confinement all your life, nurturing you as they would a hothouse plant, I should have feared that your character would be of that visionary class.—And if they had gone into the other extreme, permitting you to act as you listed, flattering you at home and intruding you abroad, filling your imagination with exaggerated pictures of society, carping at the plainness of one set of people, and envying the gorgeousness of another, sending you to every ball, party, concert, and theatre possible; expressing great anxiety lest you should injure yourself by study or reflection; vitiating your taste and distracting your mind by all kinds of novels and romances, and catering for you all kinds of little external pleasures, and teaching you that it is your only business to seize and enjoy them, and whirl on in the circle as fast as they are presented; I should have anticipated a similar, and if possible, a worse result than that I have mentioned. And this is the case of too many, vastly too many young ladies in our beloved country. They rejoice that the period is at hand when they shall have passed their measured course of studies, and shall have finished their education! This accomplished, they are casting about how they shall trim their bark for the tides beyond. I take this period, therefore, to be a crisis, and as I before remarked, perhaps the most important one in a young lady's life. It is because the character and direction of their whole subsequent life, may depend upon the management and determinations of this precise age. They are fixing the keel to the bark, or placing the arrow on the distended string, and the destiny of either may be shaped and told at the signal of a moment.

You will be cautious, therefore, how you shape your future course; be circumspect in your calculations, and discriminating and judicious in the selection of the sources upon which you intend to rely. you have hitherto lived in circumstances of apparent ease and comfort; you have been surrounded by kind and liberal friends; you have known but few sorrows, and have been comparatively happy. But you cannot, you should not rely upon the stability of this state of things. Every thing around us is momently indicative of change. To day a man is elevated, to-morrow he will be depressed; to-day he is rich, to morrow he will be poor. This year a whole family are prosperous and happy; the next year they may be overwhelmed with misfortune and misery. Change is a predominant feature in the constitution of nature We are never properly educated, until our education conforms to this constitution. Universal intelligible obedience to the laws of nature would be a guarantee of universal happiness. Our external relations and our duties even would seem to be deducible from these laws of a beneficent Creator. The whole world is constituted in harmony with our faculties, and is, therefore, fitted for our continued happiness, if we live conformably to its laws. We should fit ourselves for the constitution of things; we shall find its adaption to our own, and be prepared for its incidents.

If you perceive a stone falling towards you, you will fly from it, for it may injure you; if you see a fire you will not rush into it, for you know it will burn you; if you are tempted to commit a crime, you will avoid it, for you know that evil consequences will follow. In the former two cases, mere animal instinct would guide you; in the last you would be governed by reason. And thus, aided by the latter faculty with which you are endowed, will reason in a more extended sense, guide and govern you in your general line of conduct. With a clear discernment of our true relations and duties, if all our actions were submitted to the control of reason, we should seldom find cause for repining or complaint. We should act as we were made to act, and the rules of our conduct would harmonize with the constitution of nature.

In regard to your reading and studies, much more is to be said, than I have opportunity to express. Great miscalculations are made in the studies selected for females. And it is much to be regretted that the systems and institutions which are erected for them, the kind and qualifications of teachers, and the methods of teaching, are so illy adapted to *educating* them. In the education of the male sex, nothing is left undone; boys are sent to school at an early age, and placed under the care of competent teachers; academies, gymnasiums, and select schools of various kinds are opened for them, and they are provided with teachers in each branch of study; every care and attention is paid, uot only to their intellectual discipline, but to their physical training; it being admitted as to them, that bodily health and constitutional vigour should be carefully preserved and promoted, in order to develop completely the intellectual energies. Before they are sixteen years of age, more care and money has been bestowed upon their education, and they have passed through a greater severity of discipline, and a greater variety of studies, than is usually allotted to the entire course of female education! And they are not permitted to rest there; they are sent to the college, and here they ascend higher and higher, and under the care of skilful professors, are led on from one acquisition to another, until the whole circle of science perhaps is passed, and the whole field of learning is spread out before them. Every exertion is made to develop fully every faculty of the mind; to bring them all into exercise, to sharpen, strengthen, and exalt them. In the meantime, care is taken to polish the manners and improve the heart. And yet when they leave the college-halls, they are instructed that they have but just laid the foundations of their education, upon which they themselves must rear the superstructure. But, in contrast with this preparatory system even, does not the whole plan for educating females, now in use, seem but a mere mockery? And why is it? It is a false notion, that "a learned wife" is an intolerable creature; it originated in the fears of ignorance. Are your sex ambitious of the compliment, that distinguishes you as "domestick divinities," all sensibility and softness, with whose nature, business and station, mental strength and culture, are totally incompatible? Ought it to be for a moment admitted that the female mind is naturally too imbecile to meddle with learning? Such an admission is alone worthy of the days of knight-errantry. The taste of *this* age is altered. Instead of the fainting, weeping, vapid, pretty plaything, once the model of female loveliness, we demand and admire the higher and sterner qualities of the head and heart. She must be trained up to the spirit of the age; qualified for her duties; *educated.* These things are becoming more and more palpably necessary; and improvements in female education are becoming more and more plainly imperative. The spirit of universal improvement is beginning to exert its invigorating influence upon the female character; and that character, in proportion as it feels the influence, is beginning to assume a sterner quality, and a more substantial texture. But alas, in regard to female institutions, as they at present exist, every thing is ephemeral; there is not in our wide country, one institution which may be relied on as permanent.—Teachers are unstable, and indeed *intinerant*, and their qualifications oftentimes are very equivocal. Girls are sent first to one school, and then to another; they are placed under teachers, any one of whom is supposed to be competent to instruct the pupil in any branch of study, or bestow upon her any or all of the varied accomplishments! they pursue one set of studies, and then another, varying them, or changing their teachers to suit their own whims, or the notions of parents or perhaps of a third person. Every thing is desultory, unsystematick and superficial. If a regular course of study is obtained, it is owing either to the efficiency of the pupil herself, or to the uncommonly good sense and efforts of her parents. But parents, indeed, are much at fault. They are over-anxious, particularly mothers, that their daughters should have a great number of accomplishments, a genteel carriage, and a fine shape. For this purpose, they deprive them of bodily exercise, make them sit and act in constrained postures, and screw them up in those detestable stays. Never were objects more completely defeated through injudicious methods of attaining them. The whole too often results in a smattering of various kinds of knowledge, which are found of little practical utility in the business of life, with a great deficiency of those kinds of knowledge which would really be so; general impairment of the health; a bad carriage and figure, and too often, as I have seen, actual deformity of body. The young lady is thus taken from school, or her studies, at an early age, and " makes her *debut* into society" as it is called, without any other definable attainments that she would not have reached if she had not pursued the course, than a greater facility in gossiping, a more popular manner, and perhaps a more critical taste in dress. Is a woman thus educated prepared for the business of life? Is she fitted to become the guardian of the nursery, the companion of childhood, and the model of imitation? Is she worthy to become the partner of a man of sense and intelligence; qualified to stamp the first impress upon the immortal spirit of a child?

By the indications of the times, however, we are led to hope that the old notions in regard to female education are to be exploded; that the present system is to be reformed and improved, and that permanent institutions are to be established upon a more efficient plan. To remedy the present deplorable deficiency in the physical education of females, should be one of the first and especial objects of the reform. Until this reform is accomplished, I see no other way, but for females to educate themselves.

As for you, take as much exercise in the open air as you can consistently with your other duties.—Walk, ride, cultivate a little flower-garden; indoors, endeavour to learn by actual experiment the thousand minutiæ of domestick business; practice all the arts, and study the philosophy of all the mysteries that appertain to the general conduct of a household. Be a proficient in all kinds of needlework; observe the management of children and servants. You will find that industry, order, neatness, punctuality, taste, judgment, versatility, and energy are all essential qualifications of a good housewife.

If you were to experience a reverse of fortune, a teacher's capacity might be desirable. You will not, therefore, consider your education finished, until you are well qualified to teach. To become a good teacher is a difficult accomplishment. In addition to the varied knowledge it requires, a prepossessing manner, an elastick tact, discretion, energy, patience, perspicacity, versatility, efficiency, firmness, are all essential qualities. In an elementary school, a single teacher may successfully teach different branches. But in the higher departments I do not think that one teacher should ever be required to instruct in more than two branches of study.—The teacher should be as familiar with the whole subject it is her business to explain, as with household words, and it is impossible that she should be thus accomplished in a great variety of studies, and be able to teach them well. The fewer branches a teacher is confined to, therefore, I think, the better. For your purposes then, I think it would be better to select two or three studies which are pursued in the schools and which are pleasing to you, and make yourself mistress of them. In the meantime, you should acquire as much general useful knowledge as your time will permit. In this manner, you will make yourself competent to teach in ordinary situations, if need should require. In your present reading, I would commend you to history, and particularly to the history of your own country. Young ladies are deplorably remiss in this respect. If you have time, you can read collaterally, philosophical dissertations, moral treatises, works on education, natural history, biography, voyages and travels, geographical history, the higher order of poetry, but avoid all *trash* in the line of fiction. There are many novels which you may read with profit, but they should be selected by a judicious hand.

I intended to remark further in relation to your conduct and manners, but my article is becoming too much extended.

T. A.

THE FIVE SENSES.

THE SENSE OF HEARING.—No. I.

The object of hearing is the perception of *sounds* in general; and as that faculty connects us more closely with the material world than sight, the consideration of the principles upon which it proceeds, and of the organs by which it is manifested, commends itself to our best attention.

Le Cat, in his *Physical Essay on the Senses*, very justly observes, that "life, deprived of sensations so useful as hearing, is a kind of premature death." A deaf man is necessarily a dumb man, and who can compute his loss? His never-sleeping guard is dead, who warned him of a thousand dangers; and now the tread of the midnight thief, the crash of the falling tree, the screaming of the drowning child, or the mutterings of the coming storm, fall upon his ear as vainly as the tear of sorrow upon the brow of death. Who can compute his loss? The rejoicing melody of spring, the sweet echoes of the valley, the loud artillery of heaven, the voice of friendship, and the hallelujahs of the Sabbath, are alike condensed into barren nothingness, and in the very excess of stillness, he even parts with the sense of silence.

Let a view of the sufferings of such a man, while it exalts the value of this precious sense, lead us to examine the natural history of our ears, and, in so doing, to acquaint ourselves with one of the most exquisite structures which the mind has ever yet been called to contemplate. But it will be necessary, first, to consider briefly the phenomena of sound, and afterwards the structure of the ear, and the phenomena of hearing.

PHENOMENA OF SOUND.

The atmosphere is the great medium for the carriage of sound; but it is not, as the ancients imagined, necessary to its production; thus, sounds may be made and perceived in water with much greater power than in the air. The Abbe Nollet, to settle this question, dived beneath the surface of some water, and struck together two stones which he held in his hands, when a shock was given to his ear which was insupportable, and which was felt on all the surface of his body, like that sensation which is produced when a solid body held in the teeth is struck by another solid body.

Sound, considered in itself, is, as far as human sagacity can trace it, the motion of an elastick fluid caused by the vibration of a solid body; this is heard whenever a blow or sudden shock is received by a body having communication by the air, or otherwise, with the ear.

Simple illustrations of this principle, are the notes of the sky-lark in mid-air, caused by the vibration of the vocal chords—the blows of a hammer in an immersed diving-bell, transmitted to the ear by the tremours of the water being communicated to the atmosphere, or the phenomenon of silent sheet lightning, in which case the electrick explosion takes place at so great an elevation, that the air is too rare to convey a vibration, and consequently no thunderclap follows.

Blows given in rapid succession, to a sonorous body, produce sounds which run into each other, and as the apprehension of the ear is not quick enough to discriminate between them, one continuous sound results, varying in its tone according to the quickness with which the blows are repeated.

An expert drummer often repeats the blows of his stick in such rapid succession, that the individual beats, which, at a slower rate, could be distinctly heard, are now lost in a uniform rumble. It is the same in large factories, where the creaking of a vast number of wheels, and the shrill whistle of innumerable spindles, are all blended in one monotonous, whirling, whizzing sound, in which the elementary notes are perfectly indistinguishable. But the most common instances, are the tremours of a bell, or the vibrations of an elastick string. In the latter example, a long and slack string would vibrate so slowly, that the separate percussions of the air would be distinctly audible. But let a string be gradually tightened, and its vibrations would progressively quicken, till the intervals between the separate sounds were lost, and a level stream of sound produced. This would be a proper musical note.

A note so produced would differ in its tone accordingly as the vibrations of the string were greater or less in the same proportion of time. A slow vibration generates a low or grave note, and a quick vibration, a high or sharp note. In a violin, a harp, or any stringed instrument, these differences of tone are produced by differences of length, thickness, weight, or tension, in the strings.

The coincidence of such sounds at regularly recurring periods, constitute what are called harmonick sounds, or concords. To make this plain, let us suppose a string to perform a certain number of vibrations in a given time, and another string to perform double the number of vibrations in the same time. In this case, the quicker string will make two vibrations for every one of the slower; and accordingly, every second vibration of the quick string will coincide, and sound in unison with the vibration of the slow string. A tone is thus produced, which is highly pleasing to the ear. It is by combining and varying these harmonick sounds, according to certain fixed relations, that sweet melodies of musick are produced. The soul seems to possess a deep sympathy with such uniting sounds, and under the darkest vicissitudes of human misery, they never fail to kindle again the dying spark of joy, and breathe a tender and delicious calm over the ruffled spirits. The ploughman varies the monotony of his labour by a cheering whistle; the fainting soldier grows strong with anticipated victory, as the trumpet sounds; and the wayward, worldly thoughts of an assembled congregration, roll with the solemn cadences of the organ, to oblivion. From Saul the evil spirit departed, as David made melody to the Lord; and it has been recorded, that the stern, relentless heart of Alexander, melted before a similar subduing influence.

> "Hear how Timotheus' varied lays surprise,
> And bid alternate passions fall and rise!
> While, at each change, the son of Lybian Jove,
> Now burns with glory, and then melts with love;
> Now his fierce eyes with sparkling fury glow,
> Now sighs steal out, and tears begin to flow,
> Persians and Greeks like turns of nature found,
> *And the world's victor stood subdued by sound!*"

We have already hinted that the property of producing or conveying sounds is common to all bodies, solid or fluid; but in order that the ear may perceive them, it is necessary that the vibrations should be performed with great rapidity: no sound becomes sensible under thirty pulsations in a second. Noises are conveyed through solid bodies with greater quickness, and are heard better, and from greater distances, than when they simply travel by the air. The scratch of a pin at one end of a log of wood, which cannot be heard by the person making it, is distinctly audible to another person placed at a distance, with his ear applied to the other end of the log. The sound of bells is conveyed by rivers to distances far remote from those in which their last faint notes are perceived on land. A bell rung under water has been well heard at a distance of 1200 feet, by a person with his head under the same body of water. And the ticking of a watch placed against the wall, in the top room of a house, may be distinctly heard by an observer in a bottom room; the wall being the medium of communication.

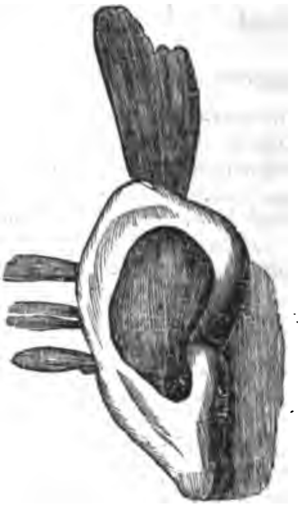
The rate at which sound travels has been calculated with great nicety; and the first mathematicians now state it to be 1125 feet per second, at 62° of Fahrenheit; or a mile in about four seconds and a half. This may be roughly tested by comparing the pulsations at the wrist with the motions of sound; a gun at sea, for example, or a clap of thunder; each beat is nearly a second, and therefore indicates a distance of nearly a quarter of a mile.

The organ of hearing in many of the lower animals, is simply a cavity covered with a membrane, which, as it vibrates to the tremours of the fluid by which it is surrounded, gives to the creature a sense of the presence and nature of the sounding object. This simple structure grows more complex in the larger and more important species, till, in the human ear, we find the utmost variety, and most exquisite combinations of all the forms of apparatus for the perception of sounds. Hence it becomes the exclusive prerogative of man to enjoy the privilege of speech, the charms of musick, and various other modifications of sound, to which ears less complex are insensible.

In considering the structure of the human ear, we shall begin from the outside, and take the parts successively as they lie, and afterward regard them in their natural connexion.

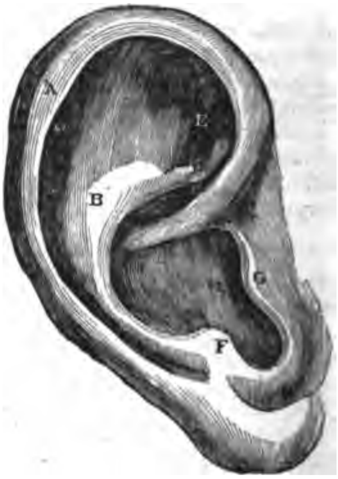
1. THE EXTERNAL EAR.

The external ear is an elastick cartilaginous cup, for catching and conducting sounds to the internal ear. For this purpose it is very admirably contrived. Its surface is smooth and folded into grooves, which, assisted by a raised border, and several concave spaces, carry with unerring precision whatever sounds fall upon it, immediately to the passage of the drum. Its situation, also, on the side of the head, materially contributes to the effect. In a savage state, men possess, in a limited degree, the power of elevating or bringing forwards their ears, in order to catch the sounds more perfectly in particular directions, but the hereditary domestick usages of civilized life have destroyed our command of this faculty. It is very remarkable, however, that in cases of injury to the internal ear, and consequent deafness, the patients have gradually recovered the power of moving their ears, and with it a portion of their lost hearing.



The external ear, showing also the muscles by which it is moved.

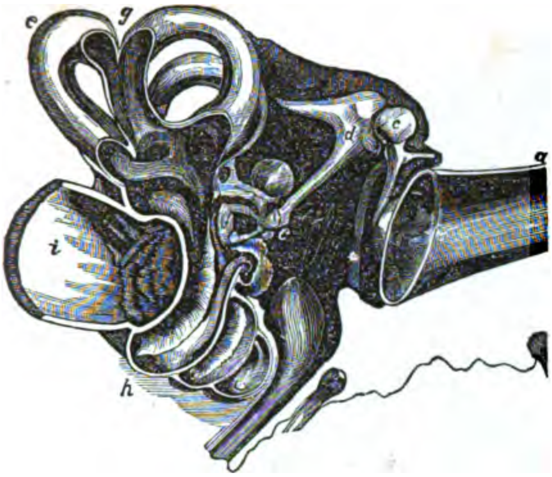
The external ear has been divided into a number of parts, to each of which names have been given They are exhibited in the following engraving.



A, the helix, or raised border of the ear. B, C, D, the antihelix, a triangular elevation of the cartilage. E, the scapha, a depression. F, G, the tragus and the antitragus: these little prominenses act as guards, or keeps, to the mouth of the passage, and assist in preserving the sounds on their entrance from dispersion. H, the concha, or great cavity of the ear. The lobe of the ear is that part which is pierced for the ear-ring, and is useful in preventing the passage of a sound in the direction of the jaw, and is, besides, a very ornamental appendage.

2. THE TUBE OF THE EXTERNAL EAR.

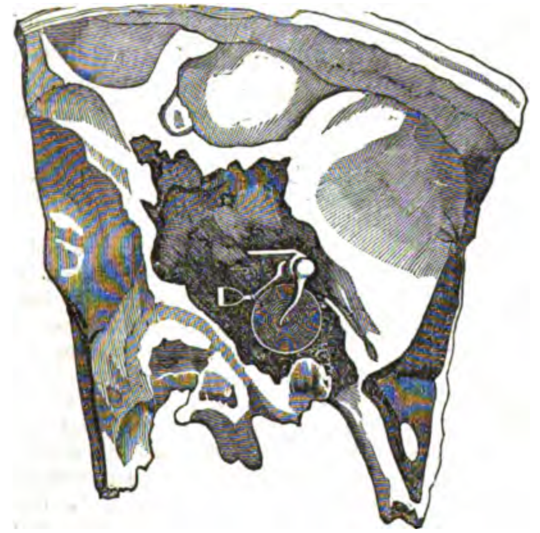
This is called by anatomists the *meatus auditorius externus*, and is the passage through which sounds are conveyed to the tympanum, or drum, which lies stretched across its inner end. Externally it is composed of cartilage, but internally of bone. It passes upwards and forwards, and then makes a slight turn to descend to the tympanum. The end of this tube always remaining open, it is necessarily subject to the entrance of many foreign and injurious bodies,



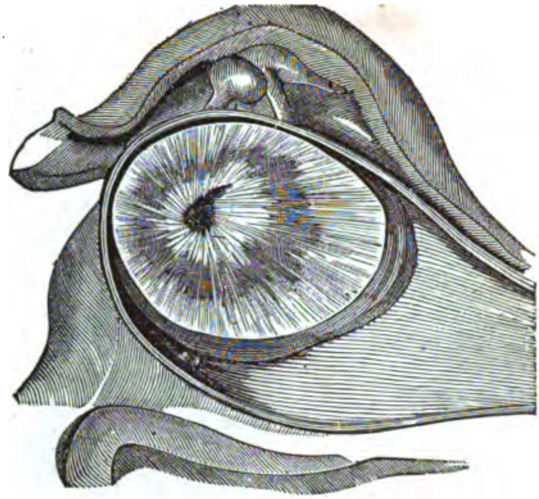
General sectional view of the structure of the ear. *a*, the meatus auditorius externus; *b*, the tympanum; *c*, the malleus; *d*, the incus; *e*, the os orbiculare; *f*, the stapes; *g*, the semicircular canals; *h*, the cochlea; *i*, the meatus auditorius internus; *k*, the eustachian tube.

as dust, insects, and the like. Some contrivance was therefore indispensable for its protection; and here the great Creator, not less kind than wise, has, by the simplest means, so effectually obviated the difficulty, that this great thoroughfare, the ear, is constantly kept *open*, unsullied by dust, and, with the exceptions common to a failing existence, clear of all obstructions.

The skin which covers the inside of the tube is set over with fine bristles, which converge irregularly towards the centre, and passing sometimes beyond it, interlace, and make the ear pervious to nothing but sound. Between the roots of these hairs a number of small glands are imbedded, called *glandulæ cerumenosæ*, whose office it is to secrete a bitter wax upon the surface of the tube, which being offensive to insects, shall either deter them from entering, or, in the event of their entrance, entangle them and prevent any further advance.



Inside of the temporal bones, showing the cavity of the tympanum, with the drum and bones of the ear in their natural situations.



Drum of the elephant's ear.

3. THE TYMPANUM.

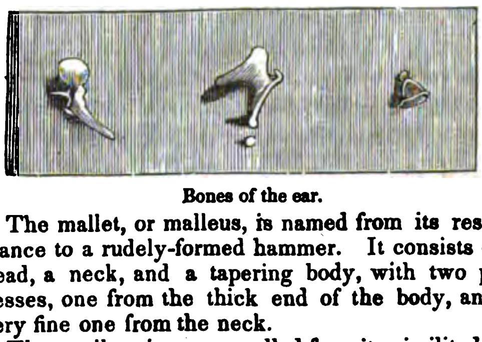
At the inner end of the auditory tube, a membrane is stretched across the passage, which is called by anatomists the *membrana tympani*, and known to all persons as the drum of the ear. It is slightly oval in its circumference, but of a funnel shape, being deeply depressed at the centre, where, as we shall presently describe, it is fastened to the end of a small bone. It is very thin, but supposed by Sir Everard Home, in opposition to Sir Charles Bell, to be muscular. In the tympanum of the whale, the muscular fibres, from their size, can be distinctly traced converging to the centre. The use of the tympanum is to convey the vibrations of the atmosphere through the bones of the ear to the labyrinth.

4. CAVITY OF THE TYMPANUM.

Immediately behind the drum is a small irregular chamber, which contains the bones of the ear, and the openings to the labyrinth, and other parts of the organ. It contains no fluid, but is open to the air through the eustachian tube, as we shall, in its proper place, describe. It will be understood then, that the external auditory tube is a passage leading to this chamber, and that at the circle where they join, the tympanum is expanded, and effectually separates the one from the other.

5. BONES OF THE EAR.

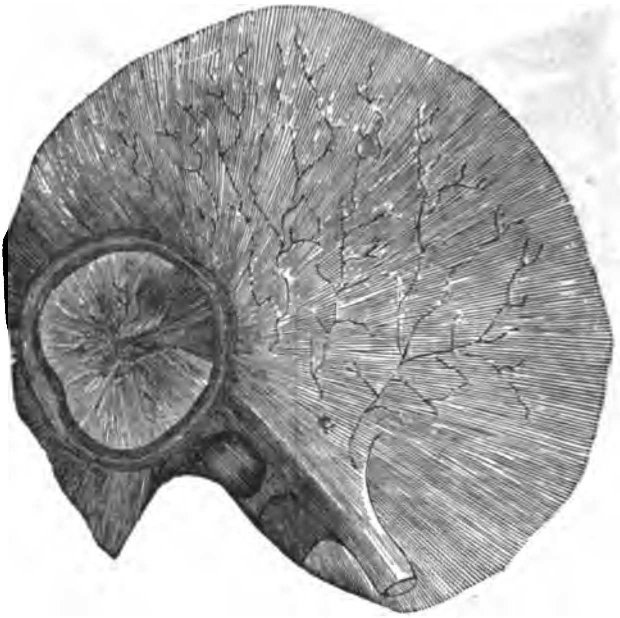
In the chamber of the tympanum are placed four of the smallest and most elegantly-shaped bones of the body. Their use is to transmit the vibrations of the tympanum to the internal ear. They are named after the objects they represent, the mallet, the anvil, the orbicular, and the stirrup bones.



Bones of the ear.

The mallet, or malleus, is named from its resemblance to a rudely-formed hammer. It consists of a head, a neck, and a tapering body, with two processes, one from the thick end of the body, and a very fine one from the neck.

The anvil, or incus, so called from its similitude to



A magnified view of the drum of the ear.

a blacksmith's anvil. It consists of a body like the head of a double tooth, with two forked-like processes, one longer and finer than the other.

The orbiculare bone, os orbiculare, is the smallest bone in the body, and has been compared to a grain of sand.

The stirrup, or stapes, receives its name from its exact resemblance to a stirrup-iron. It consists of a minute head, a delicate arch, beautifully grooved within to give it greater lightness, and of a flat base, to which the feet of the arch are joined.

The connexion and use of these bones will be described after we have completed our account of the remaining structures.

ELOCUTION.

We are happy to perceive that elocution is beginning to attract some of the attention which its importance as an art, a science, and a branch of instruction, so imperatively demands. It is an invaluable art, and a beautiful science, alike indispensable to the cause of liberty and justice, of virtue and religion. We recently published an interesting article on this subject, and now have the pleasure of furnishing some additional remarks in the hope of extending information and of exciting a more general interest in its favour. Assuredly, every publick speaker, every statesman, lawyer, clergyman, and professor, should be a good elocutionist. In that view, elocution is a matter of great weight and importance, and is worthy of a distinct professorship in any of our colleges, and universal respect, attention and even study in the country at large.

We were much gratified in listening to a lecture on this subject, delivered in April, at Clinton Hall, New York, by Professor Samuel N. Sweet, at the request of the Law Association of that city. It was shown in a conclusive and interesting manner, that no one could be an accomplished elocutionist without study, practice and a knowledge of the elements of the English language. The follies of bad speakers and indeed the mischiefs occasioned by them, were effectually exposed and judiciously censured. Critical specimens of recitation, and excellent imitations of *mannerisms* were well given, and received deserved applause. The following hasty sketch of Mr. Sweet's remarks has been furnished us for publication :—

SUBSTANCE OF A LECTURE ON ELOCUTION,

Delivered before the Law Association of the city of New York, April, 1836, by Prof. Samuel N. Sweet.

Elocution is doubtless a frequent subject of reflection ; but it may not have occupied so much attention as its importance demands. In ancient times, it implied the wording of a discourse ; but since the days of Sheridan and Walker, it has been recognised as that branch of rhetorick which belongs exclusively to delivery. It means the *manner* of reading and speaking, and not the *matter ;* the *tongue* and not the *pen*. This is so universally the sense in which it is now understood, that no modern author or lecturer of whom I have heard, excepting Ex-President Adams, has presented the subject in any other light. He maintains, in his lectures on rhetorick and oratory, that elocution, *now* as *formerly*, refers to the diction and not to the delivery.

In Greece and Rome, teachers of the science of speaking well, were called rhetoricians. They are now known by the appellation of elocutionists. In the days of Quintilian, Aristotle, Demosthenes, and Cicero, those who practised law were called actors. They are now designated by the various appellations of lawyers, barristers, attorneys, counsellors, &c. Mr. Adams might, I think, with as much propriety, call gentlemen of the bar of our own time, play-actors, as to say that elocution means, in this enlightened age and among this people, the style in which an individual *writes*, in contradistinction to the mode in which he reads and speaks. Let me not be understood as entertaining an unfavourable opinion of Mr. Adams's lectures. They are very excellent; superiour in some respects to those of Dr. Blair. But, in my opinion, the most elaborate and valuable work that has ever been issued from the press in relation to this subject, is Dr. Rush's "Philosophy of the Human Voice." All other books that have been published subsequently to that, are only "fruits of the vine which he planted."

Anterior to the publication of Dr. Rush's work, elocution was considered only as an art. He has erected its materials into a *science*. He has classified and divided the thirty-five elements of the English language. A knowledge of these elements as single specifick sounds, is conducive to the attainment of accuracy, force, and beauty of expression. Their true pronunciation, aided by an elocutionist, may be easily acquired. And by practising on the separate elements and in other exercises in elocution, articulation may be greatly improved and the voice rendered smooth, powerful, flexible, and melodious.

On this subject, I speak, as the old Roman said, "what they do know," whose organs of speech have been submitted to the *gymnastick training* which Dr. Rush recommends.

Nature undoubtedly makes a great difference in the capacities with which she endows her children; but art makes a still greater difference. Cicero tells us that "the poet is *born*, the orator is *made*." Quintilian was of the same opinion. He says: "Let them enjoy their persuasion who think to be born is sufficient to make a man an orator; they will pardon our labour who think that nothing can arrive at perfection, unless when nature is assisted by careful cultivation." The truth is, that "nothing is given to mortals without indefatigable labour." So thought the late Hon. Wm. Wirt, for he says in his excellent letter addressed to a young man, about to enter upon the study of the law, that "it is a fiat of fate from which no power of genius can absolve youth, that there is no excellence without great labour." So thought Sir Isaac Newton who discovered the true system of the universe by constantly thinking upon it. So thought Dr. Franklin, at whose electrick touch, the vivid lightnings kindled up a blazing lamp along the vaulted skies. He was a model of industry, every way worthy of our emulation. He aimed his arrow at the sun; and, although it did not reach that luminary, it ascended to the clouds. Had he lived in ancient days, he would have been deified. It is well that the time has passed by, in which divine honours are paid to erring man. But "the good that men do," ought not to be "interred with their bones." It should be cherished, ever green, in the grateful remembrance of posterity. "So let it be with Franklin."

So thought Demosthenes, who, although *hissed* by the audiences before whom he first appeared, with an ardour that could not be quenched, devoted several years to the study of eloquence, and expended some thousands of dollars in the payment of a rhetorician. After having attained accomplishment in elocution, he again appeared before the Athenians, and, with what powerful eloquence did he call upon them to stretch out the mighty arm of freedom against the usurpations of Philip?

So thought Cicero, who did not attempt to address his fellow-citizens until he had superadded to well-regulated reasoning powers, the graces of a pure and polished elocution. He studied it thoroughly for nearly forty years, and in what an enchanting manner did he address the Roman senate against the conspiracy of Catiline! On one occasion, the eloquent lips with which he spoke, constrained "great Cesar," contrary to his predetermination, to pardon Ligarius, Cicero's client. Did not Demosthenes and Cicero, by practice long and dexterously pursued, in their favourite art, enrol their names on the temple of fame? we cannot all be great, as were those to whose history I have adverted; but without the vigorous exertion of our powers, we cannot be *any thing*. Does not the illustrious Forrest, who, in early life was without friends and without any resources excepting those of his own mind, owe his unparalleled success, in the histrionick art, to his own indefatigable exertions and undying perseverance? It is an honour to our country that she gave him birth, and to this metropolis that she has liberally sustained him. How much encouragement does this single example of unwearied industry, offer to the enterprising youth of America!

In England, the language of Americans is closely watched and narrowly criticised. It seems then that the honour of our country calls on us to endeavour to be correct in our enunciation, and distinct in our utterance, every where, especially in his majesty's dominions, the King of Great Britain. When Americans call government, gover*mut*, providence, provid*unce*, been, *ben*, president, pres*edunt*, shrink, *srink*, ghosts, *ghos's*; when the other sex call Lord Byron's Bride of Abydos, "*Lud Beron's Abedus*," shall we charge England with undervaluing the elocution of her transatlantick brethren, because she complains that it is defective? But having looked on this side of the Atlantick now let us look on *that*, and see if England is entirely free from errours in articulation. Lord Brougham pronounces Birmingham *Brumegum*, and O'Connell calls weapon, *wepon*. Such errours may be traced to the bad habits, growing out of ignorance of the elements of the English language, and want of particular attention to elocution.

It is to be regretted that while great attention is paid to *song*, little or none is paid to speech in this country. Musick, in its perfection, is an elegant accomplishment. But what is it compared to the higher graces and more striking expressions of elocution? Vocal musick is more gratifying than instrumental, because the human voice, whether its notes are heard in song or speech, is the noblest and sweetest instrument of musick in existence. I agree in opinion with the editor of the North American

Review, that "*the voice of song is not sweeter than the voice of eloquence.*"

The powers of the voice alone are sufficient to justify the exclamation of the great poet of nature, "What a piece of work is man!" When highly cultivated, it sinks to the sweetest whisper, or rises to the highest tone, without any apparent labour. Such a voice never degenerates into song or drawl. It is the musick of nature.

A knowledge of the *science* of elocution, will give the *art* of conveying the sense and sentiment of discourse, not only correctly, but rhetorically. In order to convey the sense and sentiment of what we read or recite grammatically, and with gratification to the ear of the hearer, it is obvious we must perfectly understand the meaning of the author.

It is easy to say that a publick speaker should "hold the mirror up to nature," but it is not quite so easy to do it, for nature is a complicated machinery. Talking, although it is generally less formal and more free from affectation, than reading or speaking, is far, very far from being truly eloquent. Men very frequently "imitate humanity abominably" in conversation as well as in reading or speaking. Some modes of publick speaking are undoubtedly injurious to health. But properly understood and pursued, it fortifies the lungs against all disease, particularly, that *worst* of all diseases, the consumption.

Some men complain that their hearers occasionally get to sleep. The fault is in the speaker and not the hearer. It is our duty to sleep, and sleep soundly too, unless the speaker can say or do something of sufficient interest to keep us awake. There is something in true and genuine eloquence which startles the tyrant in his dreams of power, controls the surges of lawless violence, and makes "the very extremities of the earth to tremble." Can an individual sleep amidst the thunders of such eloquence? As well may he sleep amidst the clangour of the trumpet and the clash of arms.

Eloquence, in our government, is emphatically an instrument of power. There are those who indulge in the fearful apprehension that this republick, like Athens, Sparta, Carthage, and Rome, is destined soon to fall. But while we have publick men of genuine eloquence, who, although they differ in opinion as to the domestick and foreign policy of government, are zealously and fearlessly advocating the continued existence of the great and ennobling principles upon which it is predicated, let us not despair. Had we no such advocates I should consider our liberties no better than "painted air."

It was when Cicero's eloquence shook the forum that Rome was recognised as the mistress of the world. In vain then did the mighty Hannibal lift up his arm against her. But when Cicero was murdered, the "eternal city," tottering beneath the weight of her iniquities, jostled over the precipice of faction and her sun went down in blood.

The great and imperishable interests of millions of freemen are committed to the charge of the generation to which we belong. And are we not under the strongest inducements to strive for the mastery in publick speaking?

If I have presented to you a single additional incitement to the many already before you, for increased exertion in restoring elocution to its former position, within the department of useful instruction, I feel amply rewarded. I cannot conclude without observing, if you will excuse a liberty with the poet, that it is

> "Praise enough
> To fill the ambition of a common man
> That *Webster's* language is his mother tongue,
> And *Wirt's* great name compatriot with his own."

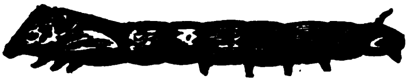
THE SILKWORM AND ITS PRODUCTIONS.

The cultivation of silk, which has hitherto been such a wonderful source of profit to France and many of the Eastern countries from a very early period, is beginning to excite the attention of our countrymen. It has been found that the Chinese mulberry, (*Monis multicaulis*,) which is superiour to any other species, can be cultivated successfully in as high latitudes as Massachusetts and even higher. Being a native of the warmer climate of China, it would seem therefore, that the climate of most of the states of the Union would be favourable to its growth. This species must supplant the white mulberry, (*morus alba*,) hitherto cultivated in England, Germany, France, and even Italy, as the favourite food of the silkworm. It is of very rapid and luxurious growth, and its leaves are broad and rich, perhaps a dozen times larger than those of the common white mulberry. The species is quite rare in this country as yet, and indeed so scarce is the white mulberry, which is the more common of the two, that its seed is now in demand in Connecticut at $7,50 per pound. There are more individuals, however, about to engage in the silk business this year than at any former time. Connecticut has produced more silk, hitherto, than any other state in the Union, and perhaps than all the other states put together. Indeed, the income from the sale of the cocoons, which is the only profitable way in which the producers can manage this business, was last year very considerable in that state. The success of the enterprising people of Connecticut has stimulated many of their fellow-citizens in other states to take hold of this business. Massachusetts has already made considerable advancement in it; New York and Pennsylvania are doing a little, Ohio more, and New Jersey is about commencing a more extended plan of operations. The Western states, will be found, we think, peculiarly favourable to the culture of silk; the climate and soil seem in every respect to be adapted to it. When the business shall be thoroughly understood, the best practicable system for this country matured, and the cheapest kind of labour husbanded and applied to it, we see no difficulty in the way of rivalling any nation on the globe in the production of this valuable article, whether we regard quantity or quality.

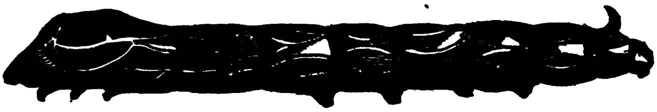
First age too small to be represented.

Second age of the Worm.

Third age of the Worm.



Fourth age of the Worm.



Fifth age of the Worm.

Moth.

Cocoon.

Moth and its Eggs.

The history of the silk culture, is full of the most interesting details; and not less so, indeed is the manner of its production and manufacture. To do justice to either branch of the subject would require a volume. We shall content ourselves therefore with a few general particulars.

Silk is the production of the *Bombyx mori*, or the silkworm of the mulberry tree. In other words, it is the web of a large caterpillar, which, at its full size, is about three inches in length. The real silk or silk-web, was first known in ancient Serica, a part of the Chinese Empire, and hence the Greeks called it Σηριχη, the Romans *Sericum*, the French *Soie*, the Italians *Seta*, and the English *Silk*. To Si-ling-chi, the worthy consort of the emperour Houng-Ti, belongs the honour of having been the first silk-culturist. "The empress gathered the silkworms from the trees, and, with the women attached to her household, endeavoured to tend them with much care, in the imperial apartments, to supply them abundantly with mulberry leaves, and to keep them very clean." The fair sovereign also taught her women to card and weave, and convert the raw material into clothing stuffs, and to embroider them with representations of flowers and animals. This lady, deserving of immortality, lived about 700 years before Abraham, or 2,700 years before Christ. Silk subsequently became a profitable article of exportation. The traders of Serica carried their silken stuffs all over Asia, obtaining great prices and ready sales. From Persia, it found its way into Greece, about the year 325, B. C. From India, A. D. 274. It was known at Rome in Tiberius's time, when a law was passed forbidding men to debase themselves by wearing silk, fit only for women. Heliogabulus first wore a garment of silk, 220.

"But the secret of producing and manufacturing the silk, was still kept in China, until the sixth century, when it was obtained under the emperour Justinian, by the aid of two monks, who first brought the seed of the mulberry, and who afterwards, in consequence of the promises of liberal rewards offered by the emperour, returned on foot to China, and at the risk of their lives, brought the eggs of the insect in a hollow cane, the exportation of them from China, being forbidden on pain of death." In 1130, some Greek manufacturers of silk, brought by Roger, king of Sicily, to Europe, settled at Palermo, where they taught the Sicilians, not only to breed up the silkworms, but to spin and to weave silk. The art was afterwards carried to Italy, and to the south of France. Venice, inveigled silk weavers from Greece and Palermo, in Sicily, 1207. Silk mantles were worn by some noblemen's ladies at a ball, at Kennelworth castle, in 1286. It was first manufactured in France, in 1521; in England, in 1604. Silkworms and mulberry trees were propagated by Henry IV., through all France, in 1559. The broad silk manufacture from raw silk was introduced into England, in 1620. Lorube's famous silk throwing machine was erected at Derby, in 1719. The first experiment made in Germany was in 1598, but nothing of importance was accomplished, until Frederick the Great regenerated the silk culture about 1744. Now, however, the knowledge of the art has extended throughout Europe, and in France it has become one of the most productive sources of wealth. That kingdom probably derives, judging from former data, 125,000,000 franks annually from the growth and fabrication of silk. The amount may be larger. The business is new in our country, but it is rapidly extending itself, and promises soon to become a source of great profit.

The *modus operandi* in this business, from the hatching of the worm to the reeling of the silk, inclusive, is briefly as follows: The worm is hatched from a little ash-coloured egg, no larger than a grain of mustard seed. From this, it attains its full growth in about 32 days, during which time, it casts off its outer skin, generally four times, which are called moultings. The first moulting is usually about the fourth or fifth day; the second the eighth or ninth; the third, on or about the fourteenth, and the fourth, about the twenty-second day. The intermediate times before and after and between the moultings, are called ages. At the time of each moulting, they cease eating, and remain some hours in a sort of torpid state; but between the moultings, they feed and grow very rapidly, and especially in the last age, they devour large quantities of food, considering their size. Their favourite food as before remarked is the leaves of the mulberry, although they will eat other leaves when very hungry.

At the end of the fifth age, they cease feeding, and begin the operation of producing silk. This operation lasts about four days, during which time they work day and night in spinning an exceedingly fine fibre, in which they wind themselves up in a ball of about the form and size of a pigeon's egg and which may be wound or reeled off in a continuous thread. These balls are called cocoons. All that remains of the worm within the cocoon is a chrysalis, which, in about twelve days, changes into a little butterfly, or, as it is commonly called, a miller, of a grayish-white colour, which eats its way out of the cocoon. These butterflies are nearly equally divided into males and females. The females are immediately impregnated, and in about 36 hours after leaving the cocoon, they commence laying their eggs, of which, one butterfly lays about 400. The butterfly never eats, but dies in a few days after it has done laying. The eggs are kept in a cool place, to be hatched another season, or whenever the operation is wished to be repeated.

After the cocoons are completed, they are assorted, the soft from the hard, and the white from the yellow; the white cocoons being the most precious. Some of the best are selected for seed for the next year. After the floss silk is collected, the next thing to be attended to is the killing of the chrysalis in the remaining cocoons which are to be sold. This may be done by exposure to a hot sun for three days, by baking them in an oven, or by steaming or scalding them. Care is taken that the heat is not so hot as to injure the silk. One or two of the cocoons are opened to ascertain whether the chrysalis is killed. When this is accomplished and they are collected together for the purchaser, the business of the culturist ceases and the labour of the manufacturer commences. It would be an unprofitable job for the culturist to sit down to *find the ends* of the thread upon the cocoons without the aid of conveniences previously prepared. The best course for the culturist, therefore, is to stop at the completion of the cocoons, and turn them over to the manufacturer. He throws them into hot water to soften the glutinous substance which holds the fibres together, and then gathers the ends of the threads by means of a stick notched at the end. When he has gathered several fibres he commences reeling, keeping the original number of fibres the same, by adding new ones, when any of the cocoons are run off. Each silk pod consists of one single thread, exceedingly fine, the length of which varies from 900 to 1200 feet. On an average, from seven to ten pounds of cocoons give one pound of silk. After reeling, the silk is spun, and woven into stuffs. The manufacturer's machinery is very nice and ingenious, and his art requires great care and skill.

MARRIAGES BETWEEN COUSINS.

We have the authority of more than one philosopher, that these marriages are ill-advised and indeed altogether impracticable. Coleridge discouraged them, and remarked that he should discourse against them, were it not that they were permitted by the ecclesiastical law. Independent of mere assertion, there are, indeed, valid and substantial objections to these marriages, founded upon facts and experiment, and quite as firmly perhaps upon an anology deducible from nature. The fact, that the parties are of the same blood and family, should constitute, it would seem, an insuperable barrier. It would seem difficult to reconcile the mere associations which the matter in that light excites, with any sentiments of propriety which exist in a refined and enlightened community in reference either to the established customs, or the ecclesiastical or the political law. The affection existing between the parties, is the natural result of relationship, and nature in that respect did not require the aid of any new institution to continue it. Love of kindred is original, natural, and is intended to endure independently of any subsequent acts of the parties. Affection, therefore, between cousins, is no more surprising than the like between brothers and sisters, though that existing between the latter is naturally deeper than that of the more distant relation. The boasted *conquest* is false; there is none made; the plea of affection then is no excuse for the marriage. Then, taking into view the evil consequences which ensue as a general rule from similar compacts, we cannot perceive in what manner they may be justified.

The evil of these marriages results from an infringement of an organick law of the animal kingdom. Our position shall be illustrated and sustained, by the following extract from Mr. Combe's book on the *Constitution of Man*, p. 198:—"Marriages between blood relations tend decidedly to the deterioration of the physical and mental qualities of the offspring. In Spain, kings marry their nieces, and in this country first and second cousins marry without scruple; although every philosophical physiologist will declare that this is in direct opposition to the institutions of nature. The 42d number of the Phrenological Journal contains an account of an idiot in Manchester, whose parents are cousins, and one of whose sisters is likewise idiotick. His head is extremely small, particularly in the upper part of the forehead.

"This law also holds in the vegetable kingdom. 'A provision of a very simple kind, is, in some cases, made to prevent the male and female blossoms of the same plant from breeding together, this being found to hurt the breed of vegetables, just as breeding in and in does the breed of animals. It is contrived that the dust shall be shed by the male blossom before the female is ready to be affected by it, so that the impregnation must be performed by the dust of some other plant, and in this way the breed be crossed.' *Objects, &c. of Science*, p. 33. On a similar principle, it is found highly advantageous in agriculture not to sow grain of the same stock in constant succession on the same soil.

In individual instances, if the soil and plants are both possessed of great vigour and the highest qualities, the same kind of grain may be reaped in succession twice or thrice, with less preceptible deterioration than where these elements of reproduction are feeble and imperfect; and the same fact occurs in the animal kingdom. If the first individuals connected in near relationship, who unite in marriage, are uncommonly robust, and possess very favourably-developed brains, their offspring may not be *so much* deteriorated below the common standard of the country as to attract particular attention, and the law of nature is, in this instance, supposed not to hold; but it does hold, for to a law of nature there never is an exception. The offspring are uniformly inferiour to what they *would have been*, if the parents had united with strangers in blood of *equal vigour and cerebral development*. Whenever there is any remarkable deficiency in parents who are related in blood, these appear in the most marked and aggravated forms in the offspring. The fact is so well known, and so easily ascertained, that I forbear to enlarge upon it."

Every naturalist and farmer knows, that these statements in relation to the breeding of stock and the growth of grain and grasses, are entirely correct. And we hesitate not to say, that in every instance we remember, the offspring of blood relations have uniformly been inferiour to their parents. Mental deterioration is more palpable than the physical in ordinary cases. We have seen the sons and daughters of blood relations of very fair and indeed quite handsome exteriour, but their minds were very weak and idiotick. This deficiency of brains seems to be the more general mark of deterioration. But puny constitutions, feeble health, and deformities of limb and body are quite frequent. "So much for miseries arising from neglect of the organick laws in forming the *domestick compact*."

RAMBLINGS IN WINTER.—No. V.

Mud, deep and soft, thick and adhesive; trees, fallen, and lying latitudinally and longitudinally, inversely and adversely; streams, swollen and turbid, mad and rapid, and above all, *within* high banks and *without* bridges; roads, trailing through swamps and wildernesses, filled with uneven causeways and bristling with incorrigible stumps; friends, distant; dwellings, far between; sleet, snow, Indians, darkness and wild animals, rather awfully familiar; business imperative, and the journey long. Such were the characteristicks of my pilgrimage from Olean to Erie. The catalogue could not be more considerable were the voyage from the cape of Good Hope to the isthmus of Suez. The patience requisite to the completion of the journey borrowed its example of Job; the long suffering finds a parallel in the adventures of Admiral Byron; the perseverance was not unworthy a Columbus. Under such circumstances commend me to horseback, and let the creature have a sure foot, a strong leg, and a good mind; I shall find that the safest, easiest, quickest, cheapest, most sensible, philosophical, independent and dryshod way of travelling. But deliver me from *mules* and *ponies*. Moreover, let all wayfarers be fortified with common sense, practical philosophy and good humour. They will then only, be fit to go a journeying; especially, *such* a journeying.

Somewhere in Cattaraugus I met Robert Mathews, the notorious Matthias. I well knew him, for I had previously written a sketch of his life, and caused his likeness to be taken. He appeared extremely delicate, and although a severe wintry day, he was meagerly clad, and had no covering on his hands. He wore the identical green frock-coat in which he always appeared years before; his hair and beard were long, and his feet were well fortified with a pair of new and unusually stout cowhide boots. In relation to his past life, character and doctrines, he was more silent and cautious than I have ever known him. The rude hands of publick justice have probably taught him the valour of discretion. He remarked, however, that his doctrines were flourishing, and that "all the best men and such as are *most easily enlightened* imbibe them." To be *easily enlightened* is sometimes, to *be duped*. I asked him how he liked the Mormonites, whom he had been visiting? "They treated me like a gentleman," said he, "but they belong to Babylon—the spirit of truth is not in them." He said he was journeying towards New York, but did not know where he should go. He appeared more sane than usual, in this cold and friendless solitude, and was to me, an object alike, of peculiar interest and pity. His fingers were singularly white and attenuated; his countenance, pale and thin, bore a remarkable expression of sternness and severity, while his piercing eyes alternately glowed with a mild intelligence, or sparkled with a savage wildness and ferocity. He is a remarkable man, and doubtless both knave and fanatick; the astonishing success of his impostures will not be forgotten by this generation at least.

Jamestown, the capital of Chatauque county, is quite a respectable place, and situated at the head of a very pretty lake. There are several churches here, a bank, and two or three comfortable hotels. The inhabitants are principally absorbed in the lumber trade. Valuable pine timber is quite abundant in its vicinity; but if the timber was exhausted, Jamestown would hardly sustain itself. As for the other towns through which I passed, I found it difficult to discover their *locus in quo*. For instance, I inquired of a damsel one day, while yet I supposed I was far off in the wilderness, the distance to Clymer. "Why la!" she replied, "they tell *me*, *this* is Clymer village!" I find the following in my note-book: *mem*:—No church—wonder if people ever attend church in these parts? Tavern 7 by 9—man fiddling—children dancing—pigs squealing—dogs howling and all the neighbours looking on!

Whenever you see hog-sties built in front of dwelling-houses, you may rely upon it, you are in the state of Pennsylvania; unless you *know* that you are in some other state. You may easily distinguish along the road, the habitations of the European emigrant. There is an air of neatness, order, and cottage comfort about them seldom observed about those of the natives; their dwellings, however humble, are tidy and warm; vines are planted at the door and under the window, and a neat little door-yard is enclosed in front by a picket or wicker fence. The outhouses and fences are in good condition, and no more soil seems to be under cultivation than can be cultivated well. Labour and improvements attach the proprietor to the place, and all about him appears settled, contented, and happy. It is different with the American emigrant. His mind is unsettled and unconcentrated; he provides for the present, but he is always on the *qui vive* for fresh adventures and speculations. Every thing seems transient and unquiet; his mind is distracted with innumerable projects for gratifying the overruling passion to make money—to get money. He seldom forms a permanent attachment for a "local habitation," but is always ready for a new start at a moment's warning.

Erie is a very good looking city, built mostly of brick, around a spacious open square. It has a respectable harbour, and is rapidly increasing in commercial importance.

I reached Conneaut in a notable storm. It was a cold and violent northeaster, accompanied with snow and sleet. A man, who had been rescued from a sloop that had been towed in from the lake, was brought in here in a state of insensibility. He was the only survivor of seven or eight persons who were found dead in the sloop. On recovering himself, he stated that in attempting to go up the lake, they were overtaken by a storm which handled the vessel at its mercy, and paralyzed the energies of the crew. The sails were rent, the ropes broken, a part of the mast carried away, and the vessel sprung aleak. All hands were kept at work night and day; but in consequence of the violence of the wind and waves, and the severity of the cold, the sloop could be but ineffectually managed. Every thing was deluged with water and stiffened with ice; the fires were extinguished, and there was no refuge from the wet and cold. The crew continued to work until nature could endure it no longer. They fell asleep one by one and perished. The captain gradually became unconscious, and stiffened in death as he stood at the helm in the faithful discharge of his duty. A female lying in the cabin, whose infant had long before ceased to cry, and this individual who was finally rescued, were the only survivors. The storm raged, the waves dashed over the deck, and this man stood alone at the helm. He heard the suffering female below call on the captain for assistance, until her voice gradually died away and was hushed for ever! Hungry, wet, frozen, and conscious that he was alone, this man held fast the helm, and kept his eye steadily and wsitfully ahead. When he came in sight of Conneaut, his condition was observed, and boats were immediately sent to his relief. As soon as they reached him, he fell into a state of insensibility, in which he remained for several hours. When he recovered, he accounted for the melancholy fate of his companions, and went to see them buried on the shore.

I envy not the wisdom of those who insist upon travelling upon lake Erie late in the fall or in the winter, when they can reasonably go by land. This lake is not fit to be navigated between the fifteenth of November and the first of April. There are more lives foolishly lost upon these waters in that season, than in all the other maritime business of the United States, in the same length of time.

Pursuing my course along the ridge road, I was joined by a Buckeye,* from Scioto bottom, who proposed to be my companion. "How fur do you allow to rush ahead in a day?" he inquired. I replied, "About forty miles; can you go that?" "I expect;" he rejoined. I was struck with the apparent fertility of the soil and luxuriance of vegetation in the vicinity of Chagrin in Geauga county. "That man has a heap of corn, I'll allow," observed my companion, as we surveyed a field of stubble. "Remarkably high stalks, ten to fifteen feet!" I exclaimed. "It's no great shakes after all; down south I've seen farmers blade their corn and lop the ears, and then turn their cattle in; the ears would be too high for their reach." "Then I suppose they have to employ ladders in order to gather it." "I expect."

Cleveland is one of those magical places of the wonderful west. It has grown up within a few years to be one of the most important places on the lake. Its population are all young, active, intelligent and enterprising, and are very rapidly increasing in wealth and numbers. It is provided with an excellent harbour, and in respect to the business of the lake and the interiour, it is central and convenient. The plan of the town is very judiciously designed, and is calculated to render it one of the most beautiful places in the state.

Rambling up to a log tavern at Rockport, at seven o'clock in the morning, our curiosity was somewhat excited by a crowd at the door, and we dismounted. I had no sooner entered the threshold, than my companion had disappeared. I followed an irresistible current that carried me upwards, and discovered the secret of all this business on the second floor. A dancing party had collected here the day before at 2 o'clock P. M. and had continued the sport all night. My companion was already upon the floor, leading down a double shuffle, with his coat off, his cravat thrown aside, and his shirt-collar unbuttoned. I observed the minuet, the pirouette, the gallopade, the reel, the contra dance, cotillion, cheat, hipsey-saw, shuffle, and a variety of other indescribable steps, all in full exercise, at the same time and to the same tune! The sport was too good for my companion to care about resisting it; nothing could entice from it; he "went it" *con amore*, and I was obliged to "rush ahead" without him.

The road between Rockport and Milan is, in the cold season of the year, of the most execrable character. I witnessed the wreck of two stage-wagons within a few miles distance. A *roue* bachelor was jolted over the rear axeltree until his nose bled, and he seemed rejoiced when the wagon upset, at an opportunity to escape. I saw him crawling out of the hind part of the carriage, and the last glimpse I had of him he was struggling on all fours, and up to his elbows in mud. The native ladies of this section, never go out without high boots. When called upon to relieve the team by walking, therefore, they draw up their petticoats, leap into the mud and travel on with impunity. Several sculls were exhibited to me in the vicinity of Milan, which had been thrown up by the plough. Some of them were conical in shape; others were very much compressed at the sides.

Rambling onwards in the direction of Sandusky, I now came upon the prairies.

"I behold them for the first,
And my heart swells, while the dilated sight
Takes in the encircling vastness. Lo! They stretch
In airy undulation far away,
As if an ocean in its gentlest swell
Stood still, with all its rounded billows fixed
And motionless for ever."—BRYANT.

In comparison with the great prairies of the Far West, they are of limited extent, but still, they present a beautiful scene. Many of them are ten and fifteen miles long, two or three miles wide, surrounded with oak hammocks, and dotted here and there with clumps of trees, some of them planted in circles, others in rows, with the regularity of the nicest art. The enclosures of the farmer are always on the prairie border in conjunction with the woods, and generally in the neighbourhood of water. The soil is very favourable for corn, wheat, potatoes, and grass. I observed many quail, "turkey-signs," and flocks of wild ducks and geese, (*anser Canadensis.*) The prairies are a favourite resort of the latter.

I stopped for a few moments to observe the dwelling of a thrifty farmer. It was situated in the edge of a forest, in a quiet, sunny spot, built of square timbers, nicely jointed, and all the crevices filled with plaster. Every thing wore an air of convenience, comfort and content; the enclosures were well regulated; the outhouses snug and well built, and the fences strong and in good condition. All the fields under cultivation were portions of the prairie fenced in. In the centre of a large field of fifty acres and upwards, I perceived an immense circular stack of wheat, in the midst of which three or four men and two horses were at work threshing. By the aid of a patent threshing-machine, they were getting out wheat at the rate of about one hundred bushels in a day.

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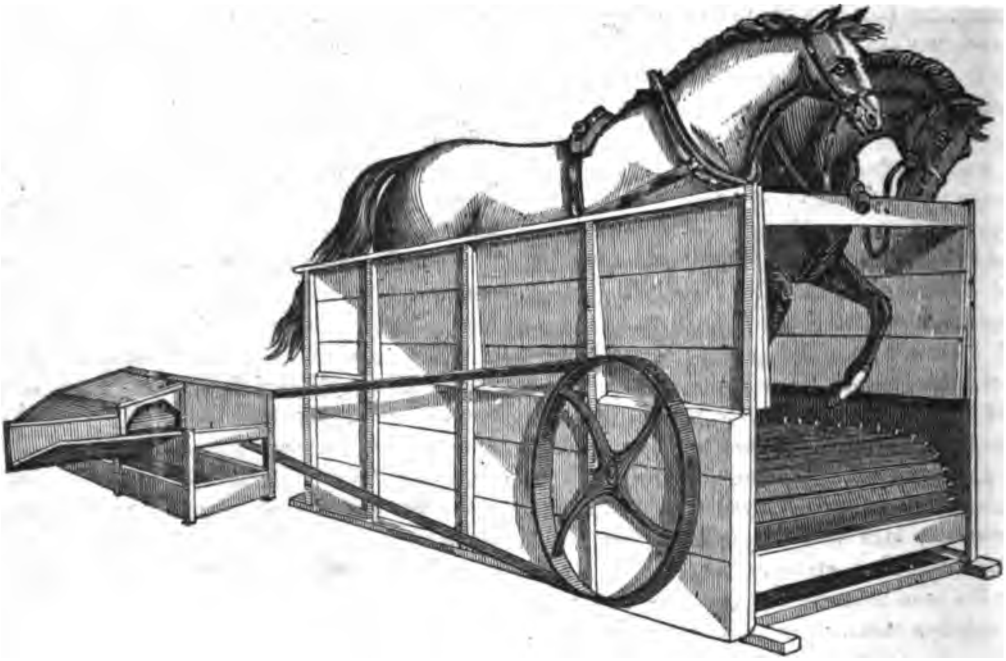
* A native of Ohio is called a "Buckeye;" of Michigan, "Wolverine;" of Indiana, "Hoosier;" of Kentucky, "Corncracker;" and of Missouri, "Pewk."



PATENT THRESHING MACHINE.

These machines are of vast importance to the producers of grain, and an immense saving of labour. The engraving represents one of them. It is constructed upon the endless-chain rotary principle.—"The revolving band or floor, upon which the horse or horses stand, is constructed with two wrought-iron chains, made similar to those used in carding-machines, fitting on a common cog-wheel forward, and running over a smooth pulley behind, with slats of wood of a convenient length and thickness attached to each flat link of the chains by bolts and nuts. This floor is supported by anti-friction or surface rollers, never before applied to horse powers of any kind.

"The thresher is on the spike principle, and is constructed as follows:—The cylinder is cast-iron, with a wheel in each end; and is cast in one complete piece, sixteen inches in diameter, and from sixteen to thirty in length; the teeth are wrought-iron, and confined in their respective places by nuts, so as to be easily replaced in case of accident; the concave is likewise cast-iron. The whole machine occupies the space of four and a half by nine and a half feet, and weighs about one thousand pounds; it can be made for any number of horses with comparatively little expense. They are manufactured at Waterford and Buffalo, N. Y., Zanesville, Ohio, and in different parts of the eastern and middle states."

This farmer, so different from many others, was reaping the grateful rewards of industry, temperance, and undivided attention to the one business he professed to pursue. Let others profit by his example.

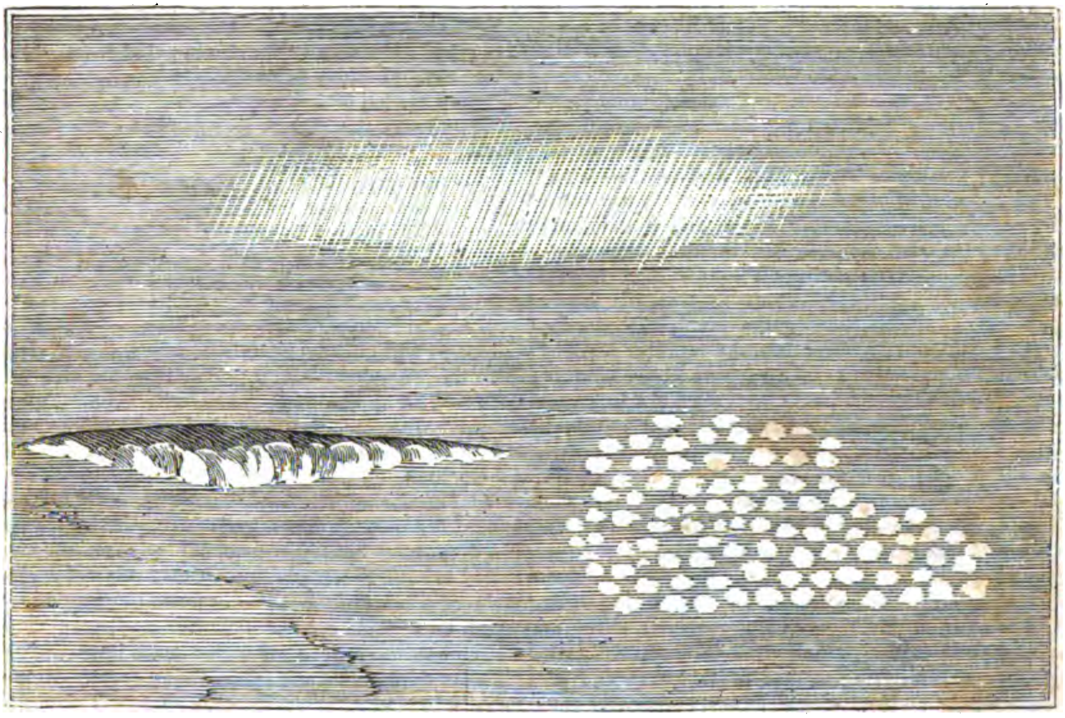
I would fain enlarge upon the advantages of travelling upon horseback, and the benefits of abstaining from intoxicating liquors along the road; I would fain expatiate upon the glorious prospects of the western states; unfold their beauties, their antiquities, their wealth, their capacities, and their vastness; and picture to you the thronging millions that shall inhabit there, ere many years shall pass away. But we ended our ramblings westward upon the Connecticut Fire Lands, and here patient reader we must wind up our narrative. Our ways henceforth diverge.

The wise man has his follies, no less than the fool; but it has been said, that herein lies the difference; the follies of the fool are known to the world, but are hidden from himself; the follies of the wise are known to himself, but hidden from the world. A harmless hilarity, and a buoyant cheerfulness are not infrequent concomitants of genius; and we are never more deceived, than when we mistake gravity for greatness, solemnity for science, and pomposity for erudition.

FORMATION OF CLOUDS.

By evaporation and condensation, the clouds are raised from the earth to their stations in the atmospherick regions, and formed into their several modifications. Electricity and heat are the chief agents in these processes.

Clouds are distinguished into seven kinds of modifications, having different densities, different degrees or kinds of electricity, and different forms. These are the characteristicks. There are three primary modifications, the cirrus, cumulus and stratus ;



CLOUDS.

two considered intermediate, cirrocumulus and cirrostratus; one which is compound, the cumulostratus; and the nimbus, which immediately precedes the fall of rain, also a compound cloud.

The cirrus is the cloud which is supposed to have the least density, and generally is in the higher atmosphere. It has a greater variety of form, extent and direction than any other; sometimes being spread out over the sky like a white thin veil of gauze, sometimes drawn out in long fibres or threads, which diverging to various points in all directions, have some resemblance to the tail of a horse, and are so called; sometimes they stretch out in long straight lines. They are also very changing in their forms, and I have observed a very rapid change of a comoid cirrus, which appeared low in the atmosphere, into a cirrostratus.

From these rapid changes it has been called the Proteus of the skies. It, however, is seen sometimes for several days unchanged. After a continuance of clear weather, it is frequently the first cloud seen. It is supposed that the cirrus under every form, is a conductor of electricity. So says Mr. Forster. Its very texture, he says, is indicative of its office. The long parallel and elevated lines he supposes to be equalizing the electricity of portions of air remote from each other; and the detached comoid cirri, equalizing their own with that of the air surrounding them. The cirrus is also interposed between two other clouds, doing the same office to them. And it is the opinion of the same writer, founded on long observation, that a cirrus ceasing so to act, ceases to be a cirrus, and is either evaporated or passed into other modifications.—When the weather is dry, the cirrus is fibrous, when damp, compact, and in a more wet atmosphere, its edges lose their distinctness, and it spreads to more gradual terminations, appearing charged with water. These are frequently soon followed by rain.

The cumulus is a collection of vapour into a hemispherical shape having a flat base and summit, variously convex. It is commonly a dense cloud, formed in the lower atmosphere, and moving along in the current of wind which is next to the earth. The cumuli are of different forms and dimensions, according to the peculiarities in the atmosphere producing them. Sometimes they are very regular hemispherical masses, at others they appear like a range of mountains, resembling much the cumulostratus. Before rain, they increase rapidly, descend lower in the atmosphere, and become fleecy and irregular in their appearance, their surfaces breaking up at the same time, and presenting large protuberances. In fair weather they form soon after sunrise, obtain their greatest size in the middle of the day, and subside toward evening. The variation of its figure according to different states of weather, favours the supposition that electricity may determine its form.

The sun's rays warming the surface of the earth, and by radiation the air above it, converts water on the surface to vapour, which rises through the rarefied region, till arriving at that point where the air is sufficiently cool and dense to suspend it and condense it, it is formed into a cloudy and visible body. This is the origin of the cumulus, and with some variations in process, is probably the forming principle of all primary clouds.

Small clouds of this sort are sometimes seen in the intervals of showers, moving rapidly about the heavens in a very compact shape, and are thence familiarly called water-wagons, though they are not rainy clouds.

The stratus is always near the earth, holding the lowest station among the clouds, and usually resting on the earth. It appears about sunset, remaining through the night and disappears in the morning. Probably when it attains much elevation it becomes transformed to a cumulus. Fogs and mists are for the most part placed in this class, though some are cirrostrati. Nor are all strati fogs. But they sometimes rise a small distance from the earth, forming the black, irregular and diffuse looking cloud which is seen nearest to the earth. But in a short time they are changed to cumulus, or perhaps in a peculiar atmosphere may go to form or feed a nimbus. The stratus is found to be electrified positively, and in general to be highly charged.

The definition of the cirrocumulus is the more dense small clouds of rotund form, and collected as in a flock.

After the cirrus has ceased to conduct, it frequently is changed into cirrocumulus. It loses the cirriform structure, descends in the atmosphere, and is formed into a collected body of rotund small clouds closely arranged in horizontal order. A very picturesque and beautiful appearance. Sometimes this cloud is transformed to cirrus; sometimes evaporates, and at others passes into the compound modifications. It is not always uniform, differing in the size and distance of its nubeculæ. It is frequent in summer, in the intervals of showers, and before an increase of temperature, of which its prevalence is considered a prognostick: and it is, therefore, supposed that the cloud may receive its modification from a warm upper current which is afterwards propagated in the inferiour region of atmosphere.

These are the clouds mentioned by the farmer's boy—

"Far yet above these wafted clouds, are seen,
In a remoter sky, still more serene,
Others detached in ranges through the air,
Spotless as snow, and countless as they're fair;
Scattered immensely wide, from east to west,
The beauteous semblance of a flock at rest."

When this appears in small shapes, dense and compact, and closely stowed together, accompanied with the cumulostratus, it is considered a sure indication of an approaching storm, which being highly charged with electricity, it tends to promote when it is thus brought into conjunction or vicinity with a rainy cloud.

The figure of the cirrostratus is very various; sometimes it is in dense longitudinal streaks, sometimes mottled like the back of a mackerel, and called mackerel clouds, sometimes like the close fibres of a compact body, as of muscles or of smooth wood, sometimes spread over the sky like a sheet, resembling the spread cirrus but more dense. This cloud is remarkable for exhibiting a great variety of beautiful colours. This happens generally when the sun is near the horizon. They have been always considered precursors of rain and stormy weather. Virgil says, the yellow in the morning indicates storm, the blue denotes rain, the red, east wind, and the last mixed with the mottled cloud, wind and showers. It is in the thin, extended sheets of this cloud, before its greater condensation, that the halo is painted.

The cumulostratus, is defined a dense irregular cloud, overhanging on all sides a plane base. It is formed usually from a cumulus which increases upwards, and losing its hemispherical figure is broken into uneven folds, and combining with other clouds produces the present modification. They frequently remain a long time, some of them intersected with cirri or cirrostrati, and form very picturesque skies; at other times are rapidly combined into nimbus. This cloud varies much in appearance and form, sometimes running in long ranges like a chain of mountains; some of the single clouds look like a disjointed, over-hanging cliff. In this modification the cloud is nearly ripened for a storm.

The nimbus is the last stage of vaporization and is defined a cloud or collection of clouds pouring rain.

An observer of the clouds may be induced by such increase of them as to obscure the sky to expect rain, and he will be frequently deceived in this expectation. The reason is, that no cloud effuses rain, till it has passed into this modification, which is distinct, and may be easily known, though by reason of its irregularity not easily described. It appears usually in huge, heavy, dark, and moist looking masses. I believe this cloud only has the power of refraction, in such degree as to paint the rainbow, though the cumulostratus and cirrostratus show very beautiful and varied colours. This power of refraction is another distinguished feature of the clouds, according to which, the halo, or luminous ring, the corona or luminous disk, and the parhelia or images of the sun and moon are produced, and the iris or rainbow.

Bodies of clouds sometimes are seen which cannot be referred to any of the modifications. But they generally do not long remain indeterminate. There is, however, a cloud frequently covering the sky in chilly unwholesome weather which appears to partake of the attributes of each of the two intermediate modifications; of a thin texture like cirrostratus, but rounded in form like cirrocumulus. It is probably the former. Before storms, it is the case that clouds frequently put off their individuality and run together in a general mass, before they are formed into nimbus.—(*See a nomenclature of clouds*, p. 342, *Fam. Mag.*)

MAHOGANY.

The common mahogany (called by botanists *swietenia mahagoni*) is one of the most majestick trees of the whole world. There are trees of greater height than the mahogany; but in Cuba and Honduras this tree, during a growth of two centuries, expands to such a gigantick trunk, throws out such massive arms, and spreads the shade of its shining green leaves over such a vast surface, that even the proudest oaks of our forests appear insignificant in comparison with it. A single log, such as is brought to this country from Honduras, not unfrequently weighs six or seven tuns.

When we consider the enormous size of a trunk of mahogany, and further learn that the most valuable timber grows in the most inaccessible stations, it must be evident that a great portion of the price of this timber must be made up of the cost of the labour required for transporting it from its native forests to the place of its embarkation.

MAHOGANY TREE.

The season for cutting the mahogany usually commences about the month of August. The gangs of labourers employed in this work consist of from twenty to fifty each, but few exceed the latter number. They are composed of slaves and free persons, without any comparative distinction of rank, and it very frequently occurs that the conductor of such work, here styled the captain, is a slave. Each gang has also one person belonging to it termed the huntsman. He is generally selected from the most intelligent of his fellows, and his chief occupation is to search the woods, or, as it is called, *the bush*, to find labour for the whole. Accordingly about the beginning of August, the huntsman is despatched on his important mission. He cuts his way through the thickest of the woods to some elevated situation, and climbs the tallest tree he finds, from which he minutely surveys the surrounding country. At this season the leaves of the mahogany tree are invariably of a yellow-reddish hue, and an eye accustomed to this kind of exercise, can, at a great distance, discern the places where the wood is most abundant. He now descends, and to such places his steps are directed; and, without compass, or other guide than what observation has imprinted on his recollection, he never fails to reach the exact point at which he aims. On some occasions no ordinary stratagem is necessary to be resorted to, by the huntsman, to prevent others from availing themselves of the advantage of his discoveries: for, if his steps be traced by those who may be engaged in the same pursuit, which is a very common thing, all his ingenuity must be exerted to beguile them from the true scent. In this, however, he is not always successful, being followed by those who are entirely aware of all the arts he may use, and whose eyes are so quick that the lightest turn of a leaf, or the faintest impression of the foot, is unerringly perceived. The treasure being, however, reached by one party or another, the next operation is the felling of a sufficient number of the trees to employ the gang during the season. The mahogany tree is commonly cut about ten or twelve feet from the ground, a stage being erected for the axe-man employed in levelling it. The trunk of the tree, from the dimensions of the wood it furnishes, is deemed the most valuable; but, for ornamental purposes, the limbs, or branches, are generally preferred.

A sufficient number of trees being felled to occupy the gang during the season, they commence cutting the roads upon which they are to be transported. This may be fairly estimated at two thirds of the labour and expense of mahogany cutting.—Each mahogany work forms in itself a small village on the bank of a river, the choice of situation being always regulated by the proximity of such river to the mahogany intended as the object of future operations.

After completing the establishment of a sufficient number of huts for the accommodation of the workmen, a main road is opened from the settlement, in a direction as near as possible to the centre of the body of trees so felled, into which branch-roads are to run being yet a mass of dense forest, both of high trees and underwood. The labourers commence by clearing away the underwood with cutlasses. This labour is usually performed by task-work, of one hundred yards, each man, per day. The underwood being removed, the larger trees are then cut down by the axe, as even with the ground as possible, the task being also at this work one hundred yards per day to each labourer. The hard woods growing here, on failure of the axe, are removed by the application of fire. The trunks of these trees, although many of them are valuable, such as bullet-tree, ironwood, redwood, and sapodilla, are thrown away as useless, unless they happen to be adjacent to some creek or small river, which may intersect the road. In that case they are applied to the construction of bridges, which are frequently of considerable size, and require great labour to make them of sufficient strength to bear such immense loads as are brought over them.

If the mahogany trees are much dispersed or scattered, the labour and extent of road-cutting, is, of course, greatly increased. It not unfrequently occurs that miles of road and many bridges are made to a single tree, that may ultimately yield but one log. When roads are cleared of brush-wood, they still require the labour of hoes, pick-axes, and sledge-hammers to level down the hillocks, to break the rocks, and to cut such of the remaining stumps as might impede the wheels that are hereafter to pass over them.

The roads being now in a state of readiness, which may generally be effected by the month of December, the cross-cutting, as it is technically called, commences. This is merely dividing crosswise, by means of saws, each mahogany tree into logs, according to their length; and it often occurs, that while some are but long enough for one log, others, on the contrary, will admit of four or five being cut from the same trunk or stem. The chief guide for dividing the trees into logs is the necessity for equalizing the loads the cattle have to draw. Consequently, as the tree increases in thickness, the logs are reduced in length. This, however, does not altogether obviate the irregularity of the loads, and a supply of oxen are constantly kept in readiness to add to the usual number, according to the weight of the log. This becomes unavoidable, from the very great difference of size of the mahogany trees, the logs taken from one tree being about three hundred cubick feet, while those from the next may be as many thousand. The largest log ever cut in Honduras was of the following dimensions:—Length, seventeen feet; breadth, fifty-seven inches; depth, sixty-four inches; measuring five thousand one hundred and sixty-eight superficial feet, or fifteen tuns weight.

The sawing being now completed, the logs are reduced, by means of the axe, from the round or natural form, into the square. The month of March is now reached, when all the preparation before described, is, or ought to be, completed; when the dry season or time of drawing down the logs from the place of their growth, commences. This process can only be carried on in the months of April and May; the ground, during all the rest of the year, being too soft to admit of a heavily laden truck to pass over it without sinking. It is now necessary that not a moment should be lost in drawing out the wood to the river.

A gang of forty men is generally capable of working six trucks. Each truck requires seven pair of oxen and two drivers; sixteen to cut food for the cattle, and twelve to load or put the logs on the carriages. From the intense heat of the sun, the cattle, especially, would be unable to work during its influence; and, consequently, the loading and carriage of the timber is performed in the night. The logs are placed upon the trucks by means of a temporary platform laid from the edge of the track to a sufficient distance upon the ground, so as to make an inclined plane, upon which the log is gradually pushed up by bodily labour, without any further mechanical aid.

The operations of loading and carrying are thus principally performed during the hours of darkness. The torches employed are pieces of wood split from the trunk of the pitch-pine. The river-side is generally reached by the wearied drivers and cattle before the sun is at its highest power; and the logs, marked with the owner's initials, are thrown into the river.

About the end of May the periodical rains again commence; the torrents of water discharged from the clouds are so great as to render the roads impassable in the course of a few hours, when all trucking ceases. About the middle of June the rivers are swollen to an immense height. The logs then float down a distance of two hundred miles, being followed by the gang in pitpans (a kind of flat-bottomed canoe), to disengage them from the branches of the overhanging trees, until they are stopped by a boom placed in some situation convenient to the mouth of the river. Each gang then separates its own cutting, by the marks on the ends of the logs, and forms them into large rafts; in which state they are brought down to the wharves of the proprietors, where they are taken out of the water, and undergo a second process of the axe, to make the surface smooth. The ends, which frequently get split and rent by being dashed against rocks in the river by the force of the current, are also sawed off. They are now ready for shipping.

The ships clearing out from Belize, the principal port of Honduras, with their valuable freight of mahogany, either go direct to England, or take their cargo to some port in the West Indies or America.

TERRIBLE ACHIEVEMENT.

The church of St. Peter and St. Paul is remarkable for its spire, the loftiest of St. Petersburgh.

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An anecdote connected with this church, and not known, I believe, out of Russia, is too remarkable to be omitted. The spire which rises

——"lofty, and light, and small,"

and is probably represented in the engraving as fading away almost into a point in the sky, is, in reality, terminated by a globe of considerable dimensions, on which an angel stands, supporting a large cross. This angel, less respected by the weather than perhaps his holy character deserved, fell into disrepair; and some suspicions were entertained that he designed revisiting, uninvoked, the surface of the earth.—The affair caused some uneasiness, and the government at length became seriously perplexed. To raise a scaffolding to such a height, would cost more money than all the angels out of heaven were worth—and in meditating fruitlessly on these circumstances, without being able to resolve how to act, a considerable time was suffered to elapse.

Among the crowd of gazers below who daily turned their eyes and their thoughts toward the angel, was a mijik called Telouchkine. This man was a roofer of houses (a slater as he would be called in countries where slates were used,) and his speculations by degrees assumed a more practical character than the idle wonders and conjectures of the rest of the crowd. The spire was entirely covered with sheets of gilded copper, and presented a surface to the eye as smooth as if it had been one mass of burnished gold. But Telouchkine knew that the sheets of copper were not even, uniformly closed upon each other; and, above all, that there were large nails used to fasten them, which projected from the side of the spire.

Having meditated upon these circumstances, till his mind was made up, the mijik went to the government, and offered to repair the angel, without scaffolding, and without assistance, on condition of being reasonably paid for the time expended in the labour. The offer was accepted; for it was made in Russia, and by a Russian.

On the day fixed for the adventure, Telouchkine, provided with nothing more than a coil of ropes, ascended the spire in the interiour, to the last window. Here he looked down at the concourse of the people below, and up at the glittering "needle," as it is called, tapering far above his head. But his heart did not fail him, and stepping gravely out upon the window, he set about his task.

He cut a portion of the cord in the form of two large stirrups, with a loop at each end. The upper loops he fastened upon two of the projecting nails above his head, and placed his foot in the others. Then digging the fingers of one hand into the interstices of the sheets of copper, he raised up one of his stirrups with the other hand so as to make it catch a nail higher up. The same operation he performed on behalf of the other leg, and so on alternately. And thus he climbed, nail by nail, step by step, and stirrup by stirrup, till his starting post was undistinguishable from the golden surface, and the spire had dwindled, and dwindled, and dwindled in his embrace, till he could clasp it all around.

So far, so well. But he now reached the ball—a globe of between nine and ten feet in circumference. The angel, the object of the visit, was above this ball, and concealed from his view, by its smooth, round and glittering expanse. Only fancy the wretch at that moment, turning up his grave eyes, and graver beard, to an obstacle that seemed to defy the daring and ingenuity of man.

But Melouchkine was not dismayed. He was prepared for the difficulty; and the means by which he essayed to surmount it exhibited the same prodigious simplicity as the rest of the feat.

Suspending himself in his stirrups, he girded the needle with a cord, the ends of which he fastened around his waist; and, so supported, he leaned gradually back, till the soles of his feet were planted against the spire. In this position he threw, by a strong effort, a coil of cord over the ball; and so coolly and accurately was the aim taken, that at the first trial, it fell in the required direction, and he saw the end hang down on the opposite side.

To draw himself up in his original position, to fasten the cord firmly around the globe, and with the assistance of this auxiliary to climb to the summit, were now an easy part of his task; and in a few minutes more Telouchkine stood by the side of the angel and listened to the shout that burst like sudden thunder from the concourse below, yet came to his ear only like a faint and hollow murmur.

The cord, which he had an opportunity of fastening properly, enabled him to descend with comparative facility; and the next day he carried up with him a ladder of ropes, by means of which he found it easy to effect the necessary repairs.

THE GLADNESS OF NATURE.—Bryant.

Is this a time to be cloudy and sad,
When our mother Nature laughs around;
When even the deep blue heavens look glad,
And gladness breathes from the blossoming ground?

There are notes of joy from the hangbird and wren,
And the gossip of swallows through all the sky;
The ground-squirrel gaily chirps by his den,
And the wilding bee hums merrily by.

The clouds are at play in the azure space,
And their shadows at play on the bright green vale.
And here they stretch to the frolick chase,
And there they roll on the easy gale.

There's a dance of leaves in that aspen bower,
There's a titter of winds in that beechen tree,
There's a smile on the fruit, and a smile on the flower,
And a laugh from the brook that runs to the sea.

And look at the broad-faced sun how he smiles
On the dewy earth that smiles in his ray,
On the leaping waters and gay young isles,
Ay, look, and he'll smile thy gloom away.

LITERARY NOTICES.

Surgery Illustrated.—Compiled from the works of Cutler, Hind, Velpau and Blasius. By A. Sidney Doane, A. M., M. D.

We feel obliged to Dr. Doane for the opportunity which has been afforded us, of an examination of this very useful and practical work, and we hazard nothing in asserting, that in all particulars the industrious author's well merited reputation will be fully sustained.

The volume consists of about two hundred pages of text, printed on large and clear type—on fine paper, exhibiting, in a condensed form, the opinions and practice of some of the most eminent surgeons upon those subjects and cases which the profession is most frequently called upon to treat. The illustrations, amounting in number to about two hundred and eighty, and contained in fifty-two lithographick plates, are admirably executed, and we are convinced will prove exceedingly valuable to the practitioner, as well as to the student, and supply a deficiency in our elementary works, which is frequently experienced, and generally acknowledged.

We possess surgical plates in a great variety, it is true, but most of them, from their great expense, can only be found in the libraries of the affluent, or among the collections of the publick institutions. The *descriptions* which accompany many of them are also in a foreign tongue, and on that account their value to the great majority of the profession is very much impaired.

The young practitioner, with but occasional opportunities of treating surgical diseases, seems to require some ready mode of recalling to memory the minutiæ of practical knowledge, previously acquired, and the student has often experienced the want of something in the aid of those descriptions of "accidents and apparatus," which, however carefully drawn, frequently convey but a feeble and imperfect idea of them. The intention of the present publication is to answer these requisitions, and we doubt not but that its great practical utility will ensure it a very extended circulation.

The figures illustrative of the *application* of *bandages* to the body and limbs, which Dr. Doane has introduced, will be found, we think, a useful novelty, for we are not aware of the existence of any plates on that subject, with English descriptions; and it is perhaps on account of the difficulty which students meet with in comprehending the mode of applying them by descriptions alone, as well as to the limited opportunities which are presented to most practitioners, of perfecting themselves by their frequent application, that we may account for the fact that we meet with so few that may be called really scientifick or neat dressers.

Dr. D. has also much enhanced the value of the plates on fractures, by exhibiting, in addition to the relative positions of the fractured ends of bones, the attachments of the muscles producing the displacement, thus presenting to the surgeon, at a glance, the several forces which require to be counteracted, in effecting their reduction.

We noticed also plates of the most approved instruments and apparatus, as also of their application, but it would swell this notice to an unreasonable length, did we attempt a description of all the plates. In addition, it would be sufficient to observe, that the following subjects will be found amply illustrated, viz.: aneurism, amputations, trephining, lithotomy, lithotrity, harelip, &c., &c.

The work is issued from the press of the brothers Harper, and its importance and value, we think, will be fully conceded, from the circumstance that many will acknowledge, after an examination of these "Illustrations," that they have revived in a few moments the knowledge and information which could only be recalled by hours of diligent study and application. Medical Intelligencer.

PUBLICK AND PRIVATE ECONOMY.

BY THEODORE SEDGWICK.

Amidst the floods of books which are at present inundating the country, it is really a gratifying and pleasurable relief, to meet with something occasionally that soars above the level of the floating mass of flood-*trash*. This book is of that pleasing character. It is a good and useful book, written by a good and benevolent man. It discourses upon the commonest topicks, in a manly but familiar manner, and in a clear and perspicuous style. It inculcates principles of the most essential interest to every citizen of the republick, and of the greatest importance and value to every man who hopes to better his condition by labour. Its object is to show the "value of property or wealth, and how it may be acquired." It treats of a science, one of the great parts of which is, "to point out what industry, and what description of labour is most useful, advantageous, and profitable to man." It speaks of wealth, civilization, education, agriculture, money, labour, wages, houses, rents, manufactories, emigrants, farms, gardens, cattle, market, consumption, poverty, slaves, of labourers, mechanicks and professional men, and divers other topicks connected with and illustrative of the main subject. It is calculated to be extensively and permanently useful, and if we mistake not, a standard American work upon the subject of publick and private economy. We sincerely recommend it to our readers, and especially to farmers, tradesmen, artificers, and labourers, who are styled by the author "the first, the original, the greatest producers of wealth."

THE LARGEST FLOWER, AND THE LARGEST BIRD.

In 1818, Doctor Arnold discovered in the island of Sumatra a flower which he names the *Rafflesia Arnoldi*, and which an author has called with much justice "the magnificent Titan of the vegetable kingdom." The human mind indeed had never conceived such a flower: the circumference of the full expanded flower is *nine feet*—its nectarium calculated to hold nine pints—the pistils are as large as cows' horns, and the entire weight of the blossom computed to be 15 pounds.

Temple, in his recent Travels in Peru, states that he shot a condor, and gives the following dimensions of its size:—"From point to point of the wings, when extended, ten feet; the longest feather, when pulled out, being three feet in length." Marco Polo however, describes the condor as a much more extraordinary size. He says:—"When the wings are spread, they measure forty feet in extent, from point to point; the feathers are twenty feet in length, and the quill part eight inches in circumference."

STATE OF SOCIETY IN MEXICO.

The following revolting picture is from the New Orleans Bee of March 16th:—"The state of society in Mexico may be partially learned from a publication made in a journal of that city, on the 12th of February by its commandant-general, Gabriel Valencio. This gentleman tenders his resignation, in announcing the arrest of a certain Colonel Yanez and others of the same rank, who had murdered the Swiss consul at Mexico, and been guilty of various assassinations in that city and Puebla—who had been equally celebrated for the robbery of the silver ingots at Viscenia, of the diligence near Santa Cruz, and of the convent of San Jose de Gracia. These discoveries were made by Colonel Olazabel, who was immediately poisoned by the banditti. These crimes being tolerated or unpunished by the general government; Valencio resigned his command, rather than become another victim—as he said that the government protected the most infamous assassination in preference to a conscientious magistrate."

A blow up.—An experiment was tried last week at the city mills, by putting about thirty pounds of powder into a large tin canister, with a tube about six feet in length, and sinking the same in a hole cut through the ice on the river, for the purpose of breaking the ice. The tube was secured to a spar and a train set for some distance to a pile of shavings; the shavings were set on fire and the explosion of the powder entirely broke up about six acres of the ice, so that it floated off in small pieces, besides shattering the ice on several acres more. Mec. & Farmer.

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